NEPC

NATIONAL ENVIRONMENT PROTECTION COUNCIL

NATIONAL POLLUTANT INVENTORY

NPI

Technical Advisory Panel

Final report to

National Environment Protection Council

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Executive Summary

Introduction

The Technical Advisory Panel to the National Pollutant Inventory was formed in March 1997 to recommend substances for inclusion on the National Pollutant Inventory. The terms of reference for the Panel are given in Appendix I.

The Panel met nine times during March and April 1997 and produced a report which was released together with the draft NEPM at the commencement of the consultation period in June 1997. The Panel continued to meet over the next few months, to fine tune various aspects of their work, and to revisit aspects of the report in the light of submissions and other comments made during the public and key stakeholder consultation.

Since the publication of the report in June 1997 until the NEPM was made on 27 February 1998, the Panel continued to provide advice and assistance to the Project Team, the Jurisdictional Reference Network and the National Environment Protection Council (NEPC) Committee.

The assigning of component scores to substances, the combining of these scores to generate total risk scores, and the use of the risk scores to rank substances so that decisions could be made on a reporting list, were processes developed specifically for the purpose of constructing a National Pollutant Inventory, and the Panel cautions against their use in other contexts.

The National Pollutant Inventory, as finally agreed by the National Environment Protection Council, requires reporting on 36 substances in the first and second reporting years. This number may increase to 90 in the third reporting year, subject to a review of the Inventory in late 1999.

Risk Scores and Ranking of Substances

The Panel drew up a comprehensive list of approximately 400 substances. Excluded from the list were substances banned in Australia or scheduled for phase-out, and those substances for which other reporting was in place because of their ozone depleting or greenhouse effects. Although the scoring system could be used for agricultural and veterinary chemicals, as well as industrial chemicals, the treatment was not felt to be ideal and so agvets were also excluded. They may be handled by alternative prioritisation schemes, and the review of the NPI may offer an opportunity to do this. These substances are discussed in Chapter 6.

A robust system of scoring and ranking substances, sufficiently sensitive to reflect particular contributions to total risk but not so sensitive as to place undue weight on any one factor, is described below. Other possible ways of achieving this are also described. An outline is given here, and full details in Chapters 1-3, in fulfilment of the Panel's commitment to transparency in its work.

Each substance on the list was evaluated on 0-3 scales for human health effects, environment effects, and exposure. The health and environment

effects were summed to give a 0-6 hazard score, and this was multiplied by the exposure score so as to give a total risk score on a 0-18 scale which facilitated ranking of the substances.

$$\text{Risk} = \text{Hazard (Human Health + Environment)} \times \text{Exposure}$$

Recommendations were made on the way this ranking could be used to generate the reporting list.

Each of the three contributions to the risk score was itself constructed by assigning scores (0-3) to a range of attributes, and these components were combined as follows:

- Human health effects - evaluating acute toxicity, chronic toxicity, carcinogenicity, and reproductive toxicity of a given substance to arrive at a score on its effect on human health.

$$\text{Human Health} = \frac{\text{acute toxicity + chronic toxicity}}{2}$$

Chronic human health toxicity is calculated as a function of:

$$\frac{\text{chronic + reproductive toxicity + carcinogenicity}}{3}$$

- Environment effects - evaluating acute toxicity, chronic toxicity, persistence, and bioaccumulation of a given substance to arrive at a score on its effect on the environment.

$$\text{Environment} = \frac{\text{acute toxicity + chronic toxicity}}{2}$$

The chronic environment component may be derived as a single score (see Section 2.3.3) or it may need to be arrived at by combination of the three factors described above, and normalisation to the 0-3 scale, before it is used in determining the single environment score.

$$\text{chronic} = \frac{\text{default chronic toxicity + persistence + bioaccumulation}}{3}$$

As a further alternative for nitrates and phosphates in solution (total nitrogen and phosphorus), the environment score may be replaced by a ‘second order effect’ score which, in the judgment of the Panel, reflects the unwanted nutrient effects of such pollutants.

- Exposure - evaluating the potential release in Australia through a combination of point and diffuse sources, bioavailability, environmental fate and volume of production.

$$\text{Exposure} = \frac{(\text{point sources + diffuse emissions})}{6} \times \text{bioavailability}$$

with the diffuse release score being constructed as follows:

$$\text{diffuse} = \frac{\text{production volume x environmental fate}}{6}$$

The panel recommends to the National Environment Protection Council that the substances listed at Appendix II comprise the initial reporting list for the National Pollutant Inventory. Appendix III presents these substances in priority order. The full list, with details of scores assigned, is given in Appendix IV.

Thresholds

The Panel has drawn heavily on the overseas experience in recommending that the thresholds for most reporting should be based on amounts of substances handled, rather than amounts of substance released or number of employees. Quantity handled thus serves as a guide to amount likely to be released, although in the special cases of the nutrients (nitrogen and phosphorus which give rise to nitrate and phosphate respectively) the threshold is the actual quantity released. For a small group of substances which are the products of combustion or thermal processes, the recommended thresholds are based on fuel or waste burned, or power consumed.

Some recommended exemptions are also set out in Chapter 4.

Particular Substances

In Chapter 5, twelve examples are discussed in detail, either because of difficulties encountered by the Panel or because changes were made to scoring after the Panel had considered submissions made to it.

Although the particulate matter considered by the Panel was that of size less than 10 μm (PM_{10}), a brief discussion is offered of the case for reducing this size limit to 2.5 μm ($PM_{2.5}$). The Panel recommends that the larger limit be retained until the matter is reviewed on the basis of improved data compilations becoming available.

A number of members of the group of substances known as Volatile Organic Compounds (VOCs) are recommended for inclusion in the NPI, but the group itself is not. The cases for and against its inclusion are set out in this chapter.

Agricultural and Veterinary Chemicals

Unlike the substances on the reporting list, the usage of agvet chemicals involves their deliberate release into the environment, although this may be indirect, as in the case of veterinary chemicals for ingestion of injection. Most members of the Panel felt that the scoring system developed for the NPI could be applied to agvet chemicals, but recognised the above difficulties and others which would arise if this were done. For instance, 'non-active' constituents, including solvents, administered along with the active substances. The decision as to whether to include agvets in the reporting list was not one that

was referred to the Panel, and so Chapter 6 contains information that will be of use to the NEPC Committee, rather than firm recommendations.

Recommendations

The Panel recommends that the Committee:

1. accept the risk based criteria and the ranking system developed by the Panel, detailed in Chapters 1-3;

2. accept the list of substances, provided at Appendix II, as the reporting list for the National Pollutant Inventory;

3. note the inherent limitations of any system which attempts to characterise risk in a simple uni-dimensional 'score';

4. release this report of the Technical Advisory Panel, with its Appendices, as an adjunct to the NEPM.

Chapter 1

Criteria for Substance Selection

1.1 The General Approach

The Technical Advisory Panel broadly supported the earlier approach taken by Pacific Air and Noise (PAAN) (1996) to score and rank nominated substances. That earlier work began with a list of approximately 180 substances developed by the Queensland Department of Environment as a starting point. The substances on this list were prioritised by PAAN on the basis of numerical scores (0-3) expressing relative hazards and expected environmental impacts. While the resulting priority listing was broadly consistent with expectations of stakeholders, the simplistic nature of the methodology was questioned, in particular the lack of regard paid to human health considerations. Certain specific matters also remained unresolved, including the speciation of metals, the inclusion of chemicals that had industrial as well as agricultural uses, and the treatment of non-methane volatile organic compounds (VOCs).

The methodology adopted by the Technical Advisory Panel was of the same type as that used by PAAN, but the starting point was a much longer list of substances, and scores were assigned to a broader range of attributes for each substance. In the first instance, substances from the Worksafe 1996 draft list of hazardous substances were added to those on the PAAN list, giving a master list of approximately 400 substances. This list included agricultural and veterinary (agvet) chemicals, which were removed from consideration at a later stage, since a decision had been taken not to include agvets in the NPI.

For each substance, the Panel combined, in ways discussed below, the scores for human health and environment to generate a hazard score, and this was multiplied by the combined exposure score to generate an overall risk score according to the traditional view that:

hazard x exposure = risk

These component scores, together with the consolidated human health, environment, hazard, exposure and overall risk scores are displayed with the comprehensive list of substances which appears at Appendix III.

1.2 Component Scores for Substances

The Panel agreed to retain the 0-3 scoring of effects because the criteria for assigning scores lacked greater precision than could be expressed by this small range of possible scores. The risks posed by particular substances to health and environment are extremely complex phenomena, difficult to characterise with any real accuracy in a simple uni-dimensional measure, and because of this the scores must be regarded as being orders of magnitude, or at best as being only semi-quantitative. Semi-quantitative data were necessary, however, for the manipulation of scores and subsequent making of comparisons between substances. The prioritisation process simply involves the combining of semi-quantitative scores. Chapter 2 details the methods by which individual score components were derived and Chapter 3 shows the method of combining component scores to achieve overall scores which would be useful in ranking substances.

The scoring of individual human health and environment attributes of substances was based on the risk phrases established by the European Commission (EC). These risk phrases have been developed by the EC as summary statements for a range of hazards, and a substance is assigned a risk phrase after being assessed against detailed criteria. Where EC Risk Phrases were not available for the substances under consideration, recourse was had to experimental data on human health, either directly or as summarised by bodies such as USEPA or PAAN (and used in the earlier work on NPI ranking). The approach is described in more detail in Chapter 2, and details of these risk phrases and the assessing criteria are provided at Appendix IV. In the assignment of a particular score (0, 1, 2, or 3) to an attribute of a substance, the score is to be assigned if the substance is described by one or more of the criterion descriptors provided for a particular score. The descriptor assigned should be the highest one for which the substance meets one or more criteria.

The Panel has exercised a precautionary approach in scoring the attributes of substances. Whereas proven negligible or nil effects attract a score of zero, a rating of '1' (or low) is used when, in the Panel's opinion, there is no evidence or insufficient evidence of negligible effect.

1.3 Combining component scores

The TAP considered a number of methods by which the scores for different attributes of the substances could be combined so as to permit the generation of a prioritised list upon which the NPI reporting list could be based. The simplest method considered was to recommend for listing any substance which received a maximum score (that is, 3) for any attribute. This 'cut-off' approach was rejected because it would not permit ranking of substances in priority order. Such an approach could be developed, also, to apply a series of cut-offs sequentially, so that a substance which was above the cut-off in, say, human health effect, would receive further consideration and be carried through the process only if it surmounted successive cut-off hurdles. A more sophisticated version of this approach would use a matrix in which scores for two attributes are displayed, and substances scoring above pre-determined levels in both attributes are entered onto the list. For instance, environment

and human health scores may be juxtaposed, or scores based on certain combinations of attributes - hazard and exposure, for example - may form the basis of the matrix methodology. Such approaches avoid uncertainties about whether equivalent scores for different attributes should be accorded the same or different weights (whether a 3 for environmental effect means the same thing as a 3 for human health effect, for instance).

None of these 'cut-off' approaches, however, permit substance-by-substance ranking for all of the substances on the master list. The method the Panel used to combine component scores in such a way as to achieve this aim, and some discussion of alternatives, including some suggested during the public consultation process are discussed in Chapter 3.

1.4 Transparency and robustness

The Panel took the view that as broad a range of hazard and exposure attributes as possible should be incorporated into the scoring system and that simple methods of combining component scores should be adopted. Simple combinations of component scores - which are not a feature of the prioritisation processes involved in toxic release inventories drawn up in other countries - make it easy for interested parties to work through the process for themselves. They thus contribute greatly to the transparency of the process. Robustness is achieved when the overall score is sensitive to individual component scores, but is not markedly dependent upon any single component score, being thus protected against the inadvertent use of inappropriate data or defaults used when relevant data are unavailable. Such robustness is generated by the compromise between use of a small data set, with its associated transparency and apparent incisiveness, and a large data set for which it might be difficult to provide adequate data and which, in any case, swamps the influence that significant data should have on the overall score. For example, in terms of exposure, the Panel has expanded the original 'release' attribute to now include: point and diffuse emissions, quantities involved, ultimate fate in the environment, and speciation. In some cases there is a paucity of relevant data, and the TAP has relied on the application of cautious professional judgement, as set out later in this report.

Chapter 2

Scoring of Substances

2.1. The List of Substances Considered

As mentioned in Chapter 1, the Panel considered a wide range of substances and developed a comprehensive list with approximately 400 entries. The major sources for this were the priority list of approximately 150 substances, developed through the Queensland Department of Environment and Heritage trial and further refined by PAAN, the Worksafe Australia List of Designated Hazardous Substances, and the List of Substances classified by the European Union as Hazardous to the Environment. The Panel agreed to include all substances for which EC Environment Risk Phrases R50 to R59 (Appendix VI) were recorded.

The Panel agreed to exclude those substances that were banned in Australia or scheduled for phase-out. The Panel was aware, however, that the withdrawal of any such substance could be delayed or that stocks could continue to be held despite its withdrawal from use. For this reason the Panel has left some of these substances in the list so that their relative ranking is clear. Some substances recently withdrawn or still being phased out have thus been italicised in Appendix IV;

The Panel also agreed to exclude ozone depleting and greenhouse gas substances (unless included for other reason, for example toxicity) on the basis that sufficient action was already underway to deal with these substances. Following the consultation period, a number of other 'substances' were excluded, including animal and vegetable fats and oils (which were felt to be sufficiently managed by existing licence requirements), and distillates such as coal tar and solvent naphtha, for which representative components (benzene, PAHs, phenols) were already on the comprehensive list. Suggestions that Biological Oxygen Demand (BOD) might be added to the list received the Panel's careful consideration, especially in connection with the inclusion of second order effects as an alternative component in the environment category. It was felt, however, that BOD was a distant surrogate for substances already included on the list, and was also influenced by other factors, and so its inclusion on the list was not supported.

For the purposes of the scoring exercise, the Panel considered those agricultural and veterinary substances scoring EC Risk Phrases R50 to R59 or those which were on the National Registration Authority's Priority Existing Chemicals list. There were approximately 20 of these. The issue of including agvets in the comprehensive list is discussed in Chapter 5.

Some attention was paid to classes of compounds, such as the alkoxyethanols and fluorine compounds (including hydrogen fluoride), and to speciation of metals. By 'speciation is meant the separate categorisation of, for instance, chromium (III) and chromium (VI) and nickel subsulfide in contrast to other nickel substances. In particular cases, reporting facilities may choose to avail themselves of opportunities for speciation, for instance reporting Cr(III) and

Cr(VI) separately. Where such speciation is not reported, then the default value will be the higher of the two; small operations may choose to report in this way rather than incur the expense of speciating their releases.

One issue which limited the effectiveness of scoring all substances on the comprehensive list was the lack of information on the human or environment effects of some of the substances. In addition many of these substances on the comprehensive list are not used, or not used to any great extent in Australia's comparatively shallow industrial base, so their exposure scores are low. Nonetheless, as mentioned above, a precautionary approach was adopted so that a 0 score was only allocated in cases where there was evidence of nil or negligible effect, the default for insufficient information being a score of 1.

The end result was a comprehensive list of approximately 400 substances.

2.2 Human Health Scores

The hazard rating scheme assigns scores of 3,2,1, and zero to each of four human health attributes - acute toxicity, chronic toxicity, carcinogenicity, and reproductive toxicity. For ease of interpretation of the information which follows, scores of 3, 2, 1 and 0 are accompanied by verbal descriptors - high (very toxic), medium (toxic), low (harmful) and zero.

The scores for human health effects are based on the EC Risk Phrases (as defined in the European Commission Directive reproduced in Appendix VI), and on other toxicity data as indicated, with the original PAAN scores used only where other information is lacking.

For an explanation of the terms used in assigning the score, see Appendix V - Acronyms and Abbreviations and Glossary of Terms.

2.2.1 Acute Toxicity

The following EC Risk Phases were applied in arriving at a score for acute toxicity effects on human health. As risk phrases for human health effects are well developed the default score from PAAN was not often applied.

High '3'(Very Toxic) - was assigned if the substance was described by one of the EC Risk Phrases R26 to R28 and R35:

R26 - Very toxic by inhalation;
R27 - Very toxic in contact with skin;
R28 - Very Toxic if swallowed; or
R35 - Causes severe burns.

Default - as scored by PAAN.

Medium '2' (Toxic) - EC Risk Phrases R23 to R25 and R34:

R23 - Toxic by inhalation;
R24 - Toxic in contact with skin;
R25 - Toxic if swallowed; or
R34 - Causes burns.

Default - as scored by PAAN.

Low '1' (Harmful) - EC Risk Phrases R20 to R22, R36 to R38 and R65:

R20 - Harmful by inhalation;
R21 - Harmful in contact with skin;
R22 - Harmful if swallowed
R36 - Irritating to eyes;
R37 - Irritating to respiratory system;
R38 - Irritating to skin; or
R65 - Harmful if taken in lungs.

Default - as scored by PAAN.

Zero - evidence indicating negligible Acute Toxicity; no EC Risk Phrases and no evidence or $LD_{50} \geq 5000$.

2.2.2 Chronic Toxicity

Just as for acute toxicity, chronic toxicity scores are arrived at by applying EC risk phrases, with the PAAN scores retained as defaults.

High '3' (Very Toxic):

R39 - Danger of very serious irreversible effects; and

Default
- Adequate evidence in humans and/or two animal species of chronic health effects;
- Sufficient human or animal evidence of developmental toxicity;
- Adequate evidence in humans and/or two animal species of neurotoxicity.;
- USEPA categories 1 to 5 on heritable mutations; or
- MED ≤ 10.

Medium '2' (Toxic):

R33 - Danger of cumulative effect;
R42 - May cause sensitisation by inhalation; or
R43 - May cause sensitisation by skin contact.

Default
- suggestive evidence in humans and/or two animal species of chronic health effects;
- Insufficient evidence, but with some data indicating possible developmental effects;
- Suggestive evidence of neurotoxicity effects;
- USEPA category 6; or
- 10 < MED ≤ 100.

Low '1' (Harmful):

- Limited evidence or no evidence proving negligible effect;
- USEPA categories 7 and 8; or
- MED > 100.

Zero

- Sufficient human or animal evidence indicating a lack of developmental toxicity; or
- Adequate evidence for negligible chronic effects.

2.2.3 Carcinogenicity

Scoring for carcinogenicity is based on consideration of EC Risk Phrases using the categories developed by the International Agency for Research on Cancer (IARC) as a default. In applying risk phrases, sub-categories have been used to provide adequate sensitivity for scoring.

High '3' - EC Risk phrases R45 (category 1) and R49 (category 1):

R45 (category 1)	-	may cause cancer - there is sufficient evidence to establish a causal association between human exposure and the development of cancer;
R46 (category 1)	-	may cause heritable genetic damage (no entries recorded); or
R49	-	as for R45(c1) but also - may cause cancer by inhalation.
Default	-	IARC categories 1 and 2a (part with epidemiological evidence).

Medium '2' - EC Risk phrases R45 (category 2), R49 (category 2) and R46:

R45 (category 2)	-	may cause cancer - should be regarded as if they cause cancer;
R49 (category 2)	-	as for R45 (c2) but also - may cause cancer by inhalation; or
R46 (category 2)	-	may cause heritable genetic damage.
Default	-	IARC category 2b (part no epidemiological evidence).

Low '1' - EC Risk Phrases R40 (category 3):

R40 (category 3 or M3) - Possible risk of irreversible effects - specifically substances which cause concern for humans owing to possible cancer or mutagen causing effects but in respect of which available information is not adequate for a making a satisfactory comment.

Default - IARC category 3.

Zero - Adequate evidence indicating negligible effects from appropriate animal tests;
- No EC Risk Phrases; or
- IARC category 4.

2.2.4 Reproductive Toxicity

Reproductive toxicity is a collector for a range of toxicological effects including teratogenicity, embryotoxicity and foetotoxicity, effects on fertility, effects on lactation, and endocrine effects such as oestrogen and androgen disruption effects. Specifically EC Risk phrases for the following scores, and the PAAN defaults, have been used.

High '3' -

R60 (category 1) - known to impair fertility; or
R61 (category 1) - known to cause harm to the unborn child.
Default - Positive evidence.

Note also that no substance entered into the list has scored a 3.

Medium '2' -

R60 (category 2) - May impair fertility; or
R61 (category 2) - May cause harm to the unborn child.
Default - Known or probable positive evidence.

Low '1' - EC Risk Phrases R63 and R62:

R64 - May cause harm to breast feeding babies;
R63 - Possible risk of harm to the unborn child; or
R62 - Possible risk of impaired fertility.
Default - Possible positive evidence.

Zero - Known, probable or possible negative evidence.

2.2.5 Single human health score

Following the assignment of these four component scores for human health attributes of a substance, the Health score was arrived at by first combining the chronic component scores and then dividing them by 3:

$$\frac{\text{chronic + reproductive toxicity + carcinogenicity}}{3}$$

This 'chronic' score, which combines the components commonly associated with chronic effects is then combined with the acute component score and divided by 2, thus normalising the score to the 0-3 scale.

$$\text{Human Health} = \frac{\text{acute} + \text{chronic}}{2}$$

It is important to note that the initial scoring system proposed by the Panel summed all of the component scores and then divided them by 4, thus normalising again to the 0-3 scale. However on review the Panel adopted the system outlined above, as it mirrored that of the Environment score (see below) and better reflected common practice.

2.3 Environment Scores

The environment hazard rating scheme assigns scores of 3, 2, 1, and zero to each of four environment attributes - acute toxicity, chronic toxicity, persistence, and bioaccumulation. Again the numerical scores 3, 2, and 1 are accompanied by verbal descriptors high, medium and low.

'Persistence' and 'bioavailability' are not criteria that can be applied to all chemicals. An organic substance such as ethanol would persist for a time in the environment but eventually be degraded, whereas a metal such as copper would persist indefinitely. Bioaccumulation is a characteristic of certain fat-soluble and chemically stable substances. Certain metal species may also bioaccumulate and in some cases - those of essential trace elements, for instance - this may be beneficial rather than harmful.

The scores for acute and chronic toxicity were based on the EC Risk Phrases, while those for persistence and bioaccumulation were based on diverse experimental data applied as criteria in the ways listed below. However, the EC Risk Phrases for chronic toxicity already incorporate a measure of persistence and bioaccumulation, so when a risk phrase was used to score chronic toxicity, the persistence and bioaccumulation scores were discarded. Where EC Risk Phrases were not applicable, the original scoring of the three components applied by PAAN was retained.

A matter which was discussed during the initial work of the Panel, but remained unresolved at the time that the draft NEPM was released, was what came to be known as 'second order effects'. The approach adopted so far to the scoring of environmental effects is essentially toxicological, and does not produce high scores for substances which, although not toxic to any serious degree, nonetheless pose environmental problems. For instance, soluble phosphates or nitrates, or substances which give rise to them in the environment, can cause unwanted biological proliferation and even eutrophication of lakes and streams. Further examples might involve nitrogen oxides (which appear on the reporting list because of their intrinsic toxicity) and volatile organic compounds (VOCs), which interact to produce ozone in the lower atmosphere.

A resolution of this dilemma was found through the introduction of an alternative method of generating an environment score, which could replace the four-component approach and lead to a single score based on Panel

judgment of the severity of the second order effect. When applied to nitrate and phosphate (in solutions), this alternative approach produced very high total risk scores. The details are set out in Chapter 5, together with a discussion of the case of VOCs.

2.3.1 Acute Toxicity

Acute toxicity was measured by the appropriate risk phrase (see below) based on toxicity to aquatic organisms. In general, aquatic organisms are more sensitive to chemical effects than are terrestrial organisms, and it is thus appropriate to use such criteria in the general case. If no information was available from the risk phrases then the default criteria were used.

High '3' (Very Toxic**) -** EC Risk Phrase R50: Very toxic to aquatic organisms.

Default
- Aquatic LC_{50} < 100ppb;
- Mammalian or avian LD_{50} < 5mg/kg; or
- Avian 5-day dietary LC_{50} < 20ppm.

Medium '2' (Toxic) - EC Risk Phrase R51, R54 and R55

R51: Toxic to aquatic organisms;
R54: Toxic to flora; or
R55: Toxic to fauna.

Default:
- 100 ppb < aquatic LC_{50} < 10 ppm;
- 5 mg/kg < mammalian or avian LD_{50} < 500 mg/kg; or
- 20ppm < avian 5 day dietary LC_{50} < 200 ppm.

Low '1' (Harmful) - EC Risk Phrase R52: Harmful to aquatic organisms.

Default
- Aquatic LC_{50} > 10ppm;
- Mammalian or avian LD_{50} > 500 mg/kg; or
- Avian 5-day dietary LC_{50} > 200ppm.

Zero - evidence is available indicating negligible effect.

2.3.2 Combined chronic toxicity, persistence, and bioaccumulation

A range of tests was used to generate a single score for chronic toxicity, persistence, and bioaccumulation. In the first instance, the chronic toxicity criteria applied by the EC in risk phrases R53 and R58 incorporate some degree of chronic toxicity, persistence and bioaccumulation, so application of the risk phrase is equivalent to generating a combined score.

Thus chronic toxicity is attributed as follows:

High '3' (Very Toxic) - EC Risk Phrases R53 and R58:

R53: May cause long term adverse effects in the aquatic environment; or
R58: May cause long term adverse effects in the environment.

If no appropriate risk phrase was assigned, then separate scores for the three components were evaluated as described below.

2.3.3 Chronic toxicity

High '3' (Very Toxic)

- Aquatic MATC < 10ppb;
- Mammalian or avian MATC < 2ppm; or
- Plant EC_{50} < 100ppb.

Medium '2' (Toxic)

- 10ppb < aquatic MATC < 100ppb;
- 2ppm < mammalian or avian MATC < 200ppm; or
- 100ppb < plant EC_{50} < 1ppm.

Low '1' (Harmful)

- Aquatic MATC > 100ppb;
- Mammalian or avian MATC > 200ppm;
- Plant EC_{50} > 1ppm.

Zero - evidence is available indicating negligible effect.

2.3.4 Persistence

Persistence may also be considered separately from chronic toxicity, in which case the score is based on a measure of how long the substance remains in the environment. Note that EC Risk Phrases are not applicable, as the EC considers persistence in the context of other attributes. The scoring system below was originally applied by PAAN, using a wide range of criteria:

High '3'- Aquatic LC_{50} < 1ppm plus continuous or repeated (C/R) releases or one-time release with chemical half-life < 14 days;

- Aquatic MATC < 100ppb plus C/R releases or one-time release with chemical half-life < 4 days;
- Mammalian or avian LD_{50} < 1mg/kg plus C/R releases or one-time release with chemical half-life < 14 days;
- Mammalian or avian MATC < 20ppm or plant EC_{50} < 1ppm, plus C/R or one-time release with chemical half-life < 4 days; or
- Avian 5 day dietary LC_{50} < 200ppm plus C/R or one-time release with chemical half-life < 14 days.

Medium '2' - 1ppm < aquatic LC_{50} < 10ppm plus C/R or one-time release with chemical half-life < 14 days;

- 100ppb < aquatic MATC < 1ppm plus C/R or one-time release with chemical half-life < 4 days;
- 50 mg/kg < mammalian or avian LD_{50} < 500 mg/kg plus C/R or one-time release with chemical half-life < 14 days;
- 20ppm < mammalian or avian MATC < 200ppm or 1ppm < plant EC_{50} < 10ppm, plus C/R releases or one-time release with chemical half-life < 4 days; or
- 200ppm < avian 5 day dietary LC_{50} < 2,000ppm plus C/R releases or one time release with chemical half-life < 14 days.

Low '1' - Aquatic LC_{50} > 10ppm plus continuous or repeated C/R or one-time release with chemical half-life < 14 days;

- Aquatic MATC > 1ppm plus C/R or one-time release with chemical half-life < 4 days;
- Mammalian or avian LD_{50} > 500 mg/kg plus C/R releases of one-time release with chemical half-life < 14 days;
- Mammalian or avian MATC > 200ppm or plant EC_{50} > 10ppm, plus C/R or one-time release with chemical half-life < 4 days; or
- Avian 5-day dietary LC_{50} > 2,000 ppm plus C/R or one-time release with chemical half-life < 14 days.

Zero - evidence is available indicating negligible persistence in the environment.

2.3.5 Bioaccumulation

EC Risk Phrases are not applicable to bioaccumulation scoring as the EC considers bioaccumulation in the context of other attributes. The scoring system below was originally applied by PAAN, using a wide range of measurable attributes for bioaccumulation:

High '3'- Aquatic LC_{50} < 10ppm plus BCF < 1,000 or measured log P<4.35 or estimated log P<5.5;

- Aquatic MATC < 100ppb plus BCF < 1,000 or measured log P<4.35 or estimated log P<5.5;
- Mammalian or avian LD_{50} < 200 mg/kg plus BCF or BAF < 1,000 or measured log P<4.35 or estimated log P<5.5;
- Mammalian or avian MATC < 20ppm or plant EC_{50} 10ppm, plus BCF or BAF < 1,000 or measured log P<4.35 or estimated log P<5.5; or
- Avian 5 day dietary LC_{50} < 500 ppm plus BCF or BAF < 1,000 or measured log P<4.35 or estimated log P<5.5.

Medium '2' - 10ppm< aquatic LC_{50} < 100ppm plus BCF < 1,000 or measured log P<4.35 or estimated log P<5.5 or

- 100ppb < aquatic MATC < 1ppm plus BCF < 1,000 or measured log P<4.35 or estimated log P<5.5 or
- 200 mg/kg < mammalian or avian LC_{50} < 2,000 mg/kg plus BCF or BAF < 1,000 or measured log P<4.35 or estimated log P<5.5 or
- 200ppm < mammalian or avian MATC < 200ppm or 10ppm < plant EC_{50} < 100ppm, plus BCF or BAF < 1,000 or measured log P<4.35 or estimated log P<5.5; or
- 500ppm < avian 5-day dietary LC_{50} < 5,000ppm plus BCF or BAF < 1,000 or measured log P<4.35 or estimated log P<5.5.

Low '1' - Aquatic LC_{50} > 100ppm plus BCF < 1,000 or measured log P<4.35 or estimated log P<5.5;

- Aquatic MATC > 1 ppm plus BCF < 1,000 or measured log P<4.35 or estimated log P<5.5;
- Mammalian or avian LC_{50} > 2,000 mg/kg plus BCF or BAF < 1,000 or measured log P<4.35 or estimated log P<5.5;
- Mammalian or avian MATC > 200ppm or plant EC_{50} > 100ppm, plus BCF or BAF < 1,000 or measured log P<4.35 or estimated log P<5.5; or
- Avian 5-day dietary LC_{50} > 5,000ppm plus BCF or BAF < 1,000 or measured log P<4.35 or estimated log P<5.5.

Zero - evidence is available indicating negligible bioaccumulation.

2.3.6 Single environment score

The environment score may, alternatively, be an expression of the 'second-order effects' and therefore consist of a single component score, but only the soluble nitrates and phosphates have been assessed in this way. More generally, the environment score is formed by addition of the acute and chronic environmental components, normalising to the 0-3 scale by halving their sum.

$$\text{Environment} = \frac{\text{acute + chronic}}{2}$$

The chronic environment component may be derived as a single score (see Section 2.3.3) or it may need to be arrived at by combination of the three factors described above, and normalisation to the 0-3 scale, before it is used in determining the single environment score.

$$\text{chronic} = \frac{\text{default chronic toxicity + persistence + bioaccumulation}}{3}$$

2.4. Exposure Scores

The component scores generated for use in deriving exposure scores are the least precise of the data sets employed in the scoring process. Relatively little information is available about production volumes for many substances. Manufacturers and users are reluctant to release such data because, they say, in a comparatively small market, such information is commercially sensitive. Assistance was obtained from the Plastics and Chemicals Industries Association in making the estimates used here, but the panel is aware that better data could become available in the future and may lead to revision of some scores. The data should only be considered in the context of this report and not as general indicators of importation, production or use.

There is nothing circular about using estimates of releases to the environment in the scoring system which will eventually guide the reporting of such releases. The Panel notes, however, that if accurate data were available then one major reason for implementing the National Pollutant Inventory would be obviated! The exposure score acts to a large extent as a modifier of the effect of the hazard data, most of which are firmly based (and this is especially true for the substances of greatest concern), to the extent that a very low exposure score almost certainly will result in a substance not appearing on the reporting list, no matter how intrinsically hazardous it might be. This is seen as practical outcome of the approach taken here, which sees a risk score as the product of hazard and exposure scores.

In order to arrive at exposure scores the Panel has refined the previous work undertaken by PAAN, by generating scores for point source and diffuse emissions together with a bioavailablity scoring.

Chemicals on the comprehensive list of substances have exposure scores derived from the following formula, in which the exposure score is normalised to the 0-3 scale:

$$\text{Exposure} = \frac{(A + B)\,E}{6}, \qquad \text{where } B = \frac{C \times D}{3}$$

and the components A - E are defined as follows:

A = point source release score where:

3 = high release and widespread release or use
2 = release or use in moderate amounts
1 = low release or use
0 = no release to environment or no use in Australia

B = diffuse source release score (0-3), based on the same hierarchy of releases

C = quantity involved where:

3 = high level production, generation, importation or use
2 = medium level production, generation, importation or use
1 = minimal level production, generation, importation or use
0 = no production, generation, importation or use

D = ultimate fate in the environment where:

3 = all product ends up in the environment
2 = significant environmental releases
1 = minor release or use as product
0 = all transformed or destroyed in manufacture

E = bioavailability in the environment where

3 = widely bioavailable forms present in the environment (little influence of environmental factors in reducing toxicity).
2 = bioavailable forms in the environment under certain circumstances (for example acid soils, low redox, specific host sensitivity)
1 = rarely in bioavailable forms in the environment(most environmental factors ameliorate any toxicity)
0 = no bioavailable form (chemical or physical) known in the environment;

The bioavailability component, E, is scored according to the above scheme whether a single species or group of species is being evaluated. This criterion was developed to differentiate substances, in particular metals, which though widely released to the environment are not widely bioavailable. The bioavailability criterion for most substances is given as 3 as, in the opinion of the Panel, this represented an appropriately precautionary approach to this issue. Only where there was evidence of reduced bioavailability did the Panel allocate a lower score. The Panel encourages the refinement of the scores allocated as further information becomes available.

2.5 A Worked Example

The example below shows how this methodology is applied in the case of formaldehyde which is ranked at #55 with a risk score of 3.6:

For human health:

- acute toxicity formaldehyde is considered by the EC to be toxic if inhaled (EC R23), swallowed (EC R25) or in contact with skin (EC R24) and also causes burns (EC R34). These descriptors equal a score of '2'.
- chronic toxicity there are no EC risk phrase descriptors for formaldehyde but examination of the descriptors indicates that formaldehyde meets one of the descriptors for a score of '3'. So formaldehyde scores a '3' for chronic toxicity in human health;
- carcinogenicity formaldehyde is considered by the EC to have possible risk of irreversible cancer or mutagen causing effects. This descriptor equals a score of '1'; and
- reproductive toxicity formaldehyde receives a score of zero as it does not trigger either the EC risk phrase descriptors or the default descriptors.

The resultant human health score is 1.5

For environment;

- acute toxicity (note this is a different measure to human health acute toxicity); formaldehyde is considered by the EC to be very toxic to aquatic organisms (EC R50). This descriptor scores a '2';
- chronic toxicity there are no EC risk phrase descriptors for formaldehyde but examination of the descriptors indicates that formaldehyde meets one of them for a score of '1'; and
- in addition as there is no EC risk phrase the descriptors of bioaccumulation and persistence are triggers but these score '0'

The resultant environment score is 1.2

For exposure;

- formaldehyde is a widely used and produced substance and so scores a '2' both in the point source and production volume categories;
- formaldehyde though does not disperse widely into the environment and only scores a '1'; and
- as it is an individual organic substance it is assumed to be widely bioavailable and scores a '3'.

The resultant exposure score is 1.3. The resultant risk score is (1.5 + 1.2) * 1.3 = 3.6.

Chapter 3

Evaluation of Total Risk Scores and Construction of the National Pollutant Inventory

3.1 Risk = Hazard x Exposure

Although a number of schemes were explored, the Panel recognised quite early that prioritisation based on relative risk, with risk representing a combination of intrinsic hazard (to human health or the environment) with the likelihood of exposure, was a sound basis for drawing up the National Pollutant Inventory. This is not to deny the validity and usefulness of 'cut-off' approaches, touched on in Chapter 1 and further developed later in this section. The Panel recognised in the risk approach, however, a combination of simplicity with coverage of the issues of concern, and devoted most of its effort to this approach.

While the relative risk approach is commonly discussed, there seemed to be no compelling logic which led to a method for combining to the risk scores. Should the approach be an additive one, or was it more appropriate to multiply the separate components together? And, in whatever approach were chosen, would it be appropriate to simply combine the human health and environment scores, or should the final result be based on the greater of the two, in a protocol which would combine elements of the cut-off approach with the overall combinatorial one?

Making use of spread-sheet capability, several approaches of this kind were explored. The outcome was that, by the time prioritisation had extended to about the first hundred substances, most approaches led to the same suite of substances appearing in the proposed reporting list. The exact order in which substances appeared on the draft list depended upon the scheme used to combine the component scores. Similar substances were thrown up by the cut-off approach, in which substances with a score of 3 in any of the categories, human health, environment or exposure, were proposed for listing, but following this approach it was not possible to generate a prioritised list.

After extensive discussion of these points, the Panel eventually opted for summation of the single scores for human health and environment, so as to give a hazard score in the range 0-6, and multiplication of this sum by the exposure score (0-3), leading to risk scores in the range 0-18. In order not to give an impression of precision which would belie the semi-quantitative nature of the scoring and combining process, all risk scores were rounded to one decimal place before being used to rank the substances to give a proposed reporting list. The full table of component scores and scores derived from them, including the final risk scores, is shown in Appendix III, in which the substances are arranged in order of relative risk. Only one - oxides of nitrogen - had a risk score above 10, but there were 22 in the range 6-10, and 57 in the range 3-5.

On the master list, there are 89 substances with risk scores of 3 or above (the addition of VOCs to table two makes the list total 90), and the Panel considers that a reporting list comprising these substances would be appropriate for a National Pollutant Inventory. There is no technical reason that the Panel could discern for breaking the list at any particular point, and so the advice of the Panel is here based on what practitioners believe would be practical for reporting facilities whilst including on the list almost all substances about which there have been major concerns in recent years. The fact that so many of this group of substances appear high on the recommended reporting list is evidence of the appropriateness of the ranking scheme adopted by the Panel. One member of the panel referred to such scrutiny of the list as constituting a 'reality check', which we take to mean a cross check on the didactic methodology through comparison with the integrated judgment of Panel members, based on their experience. That this 'reality check' is subjective, is evidenced by the fact that two submissions (discussed in the next section) embodied other scientists' reality checks and contained suggestions for alternative scoring systems which would produce results more in accord with their perceptions.

The Panel was also moved to advise to the Project Team that substances with the same integer risk score should be regarded as posing equivalent degrees of risk and thus the list should only be broken between integer scores. The Project Team may choose, for instance, to recommend a reporting list comprising substances with risk scores of 5 or above, or (as the Panel recommends) of 3 or above, but is advised not make a break in the middle of the '3' range or '4' range. In like fashion, it would be appropriate to use the breaks between integer risk scores as places where the reporting list might be subdivided. If the list were to be implemented in stages, the Project Team might wish to begin implementation with a list comprising substances with risk scores of greater than 5 or 4, and expand it to incorporate those down to 3, at a later date.

3.2 Alternative Approaches

An approach which simply places substances with one or more component scores above a pre-determined level onto the reporting list has been touched on in earlier sections of this report, and rejected by the Panel as inadequate for the task of prioritising substances through their risk scores. Such approaches are in widespread use, however, and one of interest is that developed by Imperial Chemical Industries (ICI) and used world-wide. The approach is styled the Environmental Burden (EB) with which to 'assess the potential harm to people and environment from chemical emissions'. For each substance under consideration, factors (based as far as possible on experimental data) are assigned, representing the impact of that substance on seven targets, including human health, acidification, global warming and photochemical ozone formation. The mass of substance released is then multiplied by the impact factor and the EB on each target is arrived at by summing the burdens arising from different substances. Such an approach, using estimated emissions, could be adapted to construction of a reporting list, but the ICI approach was not further pursued by the Panel.

Two submissions took up the matter of score generation and combination in some detail. Neither was preferred by the Panel to the approach eventually adopted (and described in Section 3.1), but the substance of the alternative approaches is presented here together with reflections on them which arose from Panel discussion:

Several submissions were received from one participant in the public consultation process. The first began with the contentions that (i) too much weighting had been accorded to acute toxicity data, (ii) it was important to distinguish between the environmental compartments which received various emissions, (iii) the exposure scores were too high, as a consequence of neglecting rapid destruction of released substances and (iv) the inclusion of PAAN scores detracted from the transparency of the process. Whilst conceding the last point, the Panel affirmed their satisfaction with much of the PAAN data and drew attention to the consistency between PAAN-derived scores and others. The submission argued that the 0-3 scale was essentially logarithmic, and might even have been extended as far as 5, so as to give a 100,000-fold range of scores. For human health, it was suggested that the score be derived by dividing the quantity emitted by some simple number, such as the adult LD_{50}, to arrive at a measure of the number of toxic doses emitted. Such numbers could then be used to prioritise the list of substances.

In the second submission, the participant expressed support for a cut-off approach because of its simplicity, but suggested the use of four categories - acute and chronic effects on both human health and the environment should be treated separately. The resulting list was not capable of fine prioritisation, but the Panel noted that the list so generated closely resembled that generated by the Panel's own trials of such approaches.

The third submission brought together two of these elements in the following way. Firstly, it was argued that the component scores were in fact logarithmic and that combination of them should therefore be limited to addition - equivalent to multiplication of the raw numbers from which the logarithms

were presumed to have been derived. Secondly, the four categories of the previous paragraph were retained, and scores were arrived at by adding the existing component scores (after some minor revisions) to newly derived exposure scores. A cut-off could then be applied. The Panel considered this option but noted that when it was applied to substances in each of the four groups, the result was a proposed reporting list much like that described for the simpler process but without the benefit of a ranking (used, for example to phase in the list).

Another submission adopted a similar position on the component scores, likening the 0-3 to numbers a logarithmic scale for which addition, but not multiplication, would be an appropriate operation. The submission suggested the adoption of a 0, 1, 3, 10 scale so as to encompass the great differences between substances to which different risk phrases applied, and the removal of the exposure factor from the determination of the final risk score. The submission also recommended tighter connection between toxicological data and the component scores - for instance acute health scores based on very toxic (<20), toxic (20-200) and harmful (200-2000 mg/kg), and acute environment based on aquatic toxicities of <1, 1-10 and 10-100 mg/l. This approach was said to give less prominence to substances such as ethyl acetate, which owes it presence on the Panel's list as much to volume of production and release as it does to intrinsic human health or environmental effects. The Panel, however, preferred to include expressions of exposure and the classical depiction of risk as comprising elements of both hazard and exposure, and also noted that the submission's approach was less effective at ranking substances.

It is of interest to compare the ranking recommended by the Panel with that which would result from several of the alternatives considered above, and this is done in the following table.

In column 1, are the Panel's ten highest-ranked substances. Column two shows how the top ten would appear if total hazard and risk scores were summed, and column three the order obtained when human health, environment and exposure component scores are multiplied together. The fourth column shows the result of using the system suggested in the third submission described above. All of this information is contained on page 1 of Appendix III, but is arranged here for greater clarity. Numbers in brackets, accompanying some entries in columns 2-4, show the rank order of these substances as they appear in Appendix III, for substances ranked lower than tenth.

The ten highest ranked substances, in order, from several score-combining protocols

	PANEL	SCORES SUMMED	PRODUCT OF SCORES	SUBMISSION
1	Oxides of Nitrogen	Oxides of nitrogen	Oxides of Nitrogen	Oxides of Nitrogen
2	Chromium (VI) compounds	Chromium (VI) compounds	Chromium (VI) compounds	Chromium (VI) compounds
3	Carbon monoxide	Cadmium and compounds	Cadmium and compounds	Carbon monoxide
4	Sulphur dioxide	Sulphur dioxide	Arsenic and compounds	Dichloromethane
5	Dichloromethane	Carbon monoxide	Sulphuric acid	Sulphur dioxide
6	Cadmium and	Arsenic and	Sulphur dioxide	Xylenes

	compounds	compounds		
7	Particulate matter 10 µm	Sulphuric acid	Dichloromethane	Particulate matter
8	Sulphuric acid	Dichloromethane	Glutaraldehyde (14)	Glutaraldehyde (14)
9	Xylenes	Particulate matter	Lead and compounds (11)	Acetone (22)
10	Arsenic and compounds	Total nitrogen (17)	Trichloroethylene (12)	Methyl ethyl ketone (21)

The consistency with which substances appear in the top ten is reassuring, in the sense that the prioritisation is only weakly dependent on the chosen method for combining scores. The differences between outcomes of the different methods are more significant further down the list, as can be seen from data in Appendix III.

3.3 Synergistic Effects

One submission raised possibility that synergies might exist between pairs or groups of substances and pointed out that such effects would not be recognised by the scoring system adopted by the Panel. Although toxicologists are showing increased interest in synergistic effects, very few examples have been identified. Given the difficulty of doing so, the Panel did not attempt to incorporate synergy in the scoring system. If this were to be attempted, the Panel observed, there would be difficulties encountered even with the well-known example of asbestos and tobacco smoke, since neither component consists of a single substance, although asbestos fibres would probably fit comfortably into the particles (PM_{10}) category. Other examples which had been reported involved organochlorine pesticides, which were not at this stage to be included in the reporting list.

Nonetheless, the Panel recommended that this matter be brought before a technical group for review, at an appropriate stage.

Chapter 4

Thresholds for the National Pollutant Inventory

4.1 The Design Principles

The thresholds which should trigger reporting to the National Pollutant Inventory are based on principles of simplicity and fairness. Under the first principle, thresholds are in most instances based on the amounts of substances handled, rather than on the amounts released or on surrogates such as the number of employees at a facility. Where the emitted substance is a by-product or impurity, the quantity is made to refer to the fuel or waste which ultimately gives rise to the substance of concern. The exceptions relate to nitrates and phosphates, for which the thresholds are the amounts released, and to those facilities for which electrical power consumption is the best measure of the scale of the activity.
The thresholds are thus easy to understand and will allow emitters to participate confidently and accurately in the National Pollutant Inventory. Substances on the Inventory are identified as belonging to the categories to which different thresholds apply.

A facility includes all buildings, equipment, structures, or other stationary items that are located at a single site or at contiguous or adjacent sites and that are owned or operated by the same company or individual. It should be noted that thresholds have been set high enough to exempt small business from any reporting burden. In addition, some specific activities have been exempted from reporting, and these exemptions are discussed in Section 4.4.2.

Beyond determining whether a facility needs to report, the thresholds proposed by the Panel do not provide guidance on other aspects of reporting to the National Pollutant Inventory. The question of inclusion of transfers in the Inventory, and the development of techniques to assist facilities in determining which listed chemicals they are likely to emit and the best ways of measuring or estimating these releases, were not included in the Terms of Reference for the Technical Advisory Panel

4.2 Categories of Substances

Each substance was assigned to at least one of three categories, for which appropriate thresholds were recommended.

- Category 1 contains a broad range of hazardous substances. They display a diversity of effects and arise from a diversity of sources, being typically present in materials used for production purposes. In a sense, this is a default category to which substances are assigned if they do not meet criteria for inclusion in any sub-section of the second category.

- Category 2 contains a group of pollutants which are generally common products of combustion or other thermal processes. Category 2 has been sub-divided on a load basis.

Category 2a contains the more common or voluminous products of combustion - oxides of nitrogen, carbon monoxide, particulate matter, and sulphur dioxide - from a wide range of combustion sources. The fluorides include hydrogen fluoride, which may be emitted by aluminium smelters. Polycyclic aromatic hydrocarbons (PAH) may arise from a number of combustion and thermal processes.

Category 2b contains a range of trace metals, for which emissions are significant when large quantities of fuel, especially coal and oil, are consumed, together with polychlorinated dioxins and furans.

- Category 3 contains 'total nitrogen' and 'total phosphorus' which are surrogates for the nutrients nitrate and phosphate in solution. The thresholds are quantities emitted. This approach has been used because, for significant sources of nutrients released to waterways, such loads are already used for licensing or are likely to be introduced by jurisdictions in the near future. The thresholds for Category 3 will capture medium to large waste-water treatment plants (including sewage treatment facilities), medium to large intensive livestock facilities, and larger facilities involved in food and beverage manufacture and processing, together with the actual manufacturers of such substances.

In general, any person who owns or operates a facility must report to the Inventory if a threshold is exceeded in a reporting period, which is expected to be one year.

4.3 Thresholds

Threshold quantities were determined on the basis of experience with reporting trials. The intention is to elicit reports from major emitting facilities without putting undue burdens on the operation of small facilities.

Category 1 Any facility which handles, manufactures, imports, processes, or otherwise uses 10 tonne or more of any of the substances listed in Appendix 2 as belonging to Category 1, will report its emissions of such substances. Most substances in the table fall into this category.

Category 2 These substances are by-products or impurities not deliberately handled or produced. In general, they are products of incomplete combustion or products associated with the use of fuel or electrical energy.

Category 2a A facility will report its emissions of Category 2a substances if the mass of fuel or waste burned amounts to or exceeds 400 tonne or if a peak hourly rate of 1.0 tonne is achieved. The substances in this category are:

Fluoride compounds (including hydrogen fluoride)
Oxides of nitrogen
Particulate matter 10.0 μm

Polycyclic aromatic hydrocarbons
Sulphur dioxide
Hydrogen chloride (hydrochloric acid)
Carbon monoxide

Category 2b A facility will report its emissions of Category 2b substances if the mass of fuel or waste burned amounts to or exceeds 2 000 tonne per year or if 60,000 megawatt hour or more of energy is consumed, or if power is consumed at the rate of 20 megawatt or more. The substances in this category are:

Arsenic & compounds
Beryllium & compounds
Cadmium & compounds
Chromium (III) compounds
Chromium (VI) compounds
Copper & compounds
Lead & compounds
Magnesium oxide fume
Mercury & compounds
Nickel & compounds
Nickel carbonyl
Nickel subsulfide
Polychlorinated dioxins and furans

Category 3 A facility will report its releases of Category 3 substances if its emissions to water of the nutrients listed equals or exceeds the following quantities:

Nitrogen	15 tonnes
Phosphorus	3 tonnes

In each case, reporting should be on the basis of the total amount of nitrogen or phosphorus emitted.

4.4 Exemptions

While the categories and thresholds given in the preceding two sections are of broad applicability, there remain some instances where clarification is necessary. In the main, these involve 'common sense' elaboration of the basic specifications. There should be provision for exemption for small facilities which, although handling listed substances in quantities beyond the thresholds, are nonetheless not technically equipped to report and would be put to great hardship if required to do so.

4.4.1 Article Exemption

Some facilities might qualify for article exemption because a listed substance forms part of a commercial product and, although quantities in excess of the threshold may be involved, the substance is never 'handled' in the sense intended by the specifications above. Such facilities might include hardware stores and supermarkets retailing products such as paints and domestic pesticides, household aerosols, and laboratory chemicals containing NPI listed substances and retailers of motor vehicles containing listed metals. Additionally, the article exemption should be applied to facilities engaged in manufacturing, wholesaling, or distribution if the equipment and machinery used contains listed substances. This article use exemption applies to only Category 1 threshold and emission determinations, and not to Category 2 or 3 thresholds which are derived from levels of combustion and emission loads respectively.

An article is defined as a manufactured item that is formed to a specific shape or design during manufacture, that has end-use functions dependent in whole or in part on its shape or design during end-use, and that does not release a listed substance under normal conditions of the handling, processing, or otherwise use of that item at the facility. The article exemption applies to the normal handling, processing, or otherwise use of an article. The exemption should not apply to the manufacturing process of the article itself. Listed substances processed into articles produced at a facility must be taken into account when threshold and release determinations are made.

4.4.2 Activity Exemption

The spirit of designing thresholds for the NPI requires that small businesses should not be caught in any reporting obligation. While this consideration was adhered to by the Panel in designing the threshold system, there could nevertheless be examples of small business sectors which might yet exceed the recommended reporting thresholds. These include:

- petrol stations engaging in the distribution, storage, or retail sale of fuels;
- retail drycleaning establishments;
- scrap-metal handlers trading in metal and not undertaking remelting, reprocessing of batteries or thermal processes; and
- agricultural production (ie farms). Often farms could exceed the use thresholds of the primarily industrial substances present on the NPI reporting list. Note this exemption should not relate to agricultural processing (ie tanneries).

The Panel notes that during consultation a few additional types of small facilities were added to this list.

4.5 Mixtures and Trade Name Products

NPI listed substances contained in mixtures and trade name products will need to be factored into threshold determinations. A facility which processes or otherwise uses such products is required to use the best information available to determine whether the reportable components of the product are used in amounts which trigger any of the reporting thresholds. This may prove difficult if concentration information is not provided by the supplier, but the facility should make every endeavour to obtain it.

Chapter 5

Discussion of Particular Substances

The approach adopted by the Panel in developing the scoring system was to examine many substances (over 400), rank them, and then scrutinise those substances near the top of the list (because of the high risks attributed to them). However, certain substances received even greater scrutiny, and panel discussion concerning them is reflected in this chapter. The consultation period brought helpful submissions, and in a number of cases discussions were continued with their authors. Some scores were revised when new data were located, and substances in some groups were given more individual attention; for example, the Panel's taking a speciation approach to the listing of some of the metals.

5.1 Reporting Metals and Metal Compounds

Metals and metal containing compounds are handled differently to the individual substances present on the NPI reporting list. When considering the Category 1 threshold of a metal and compounds entry facilities are required to examine the total amount of the metal and its various compounds handled. If this is exceeded facilities are then required to report their emissions of the metal and the metal component of the compounds only. In addition, it is recommended that facilities triggering a Category 1 threshold should have the option of reporting either the total metal released from their facility or the quantity released from each individual metal compound (or species) emitted.

For example, if a facility processes several different copper compounds, the threshold determination is based on the total weight of all copper and copper compounds handled. However only the emissions of the copper metal are reportable (including that metal emitted in a compound), with the weight other components of the compounds excluded from emission determinations. However, the facility, once triggering the threshold, may choose to report either the total aggregate copper released from all compounds combined or choose to report the amount of copper released by listing the weight of elemental copper for each individual copper compound released by the facility.

Some metal compounds may contain more than one listed metal, for example, lead chromate, which is both a lead and a chromium (VI) compound. Assuming that the facility handles no other lead or chromium (VI) substances, the threshold would be triggered when the quantity of lead chromate passes 10 tonne, but two separate release reports are required, one for lead and one for chromium VI.

5.2 Speciation of Metals

The Panel's initial approach was to list metals and their compounds in generic entries as 'substances' (see 5.1), but it soon became clear that this approach was inadequate for dealing with metals which might be in different oxidation states, in soluble and insoluble forms, or combined in ways that give rise to

specific toxicity. For some metals - lead, cadmium, zinc and mercury, for instance - there was little to be gained by speciation, but in the case of nickel the subsulfide and the carbonyl derivative were far more toxic than other nickel species and so were listed separately.

Chromium compounds may contain the metal in hexavalent form - chromium (VI), as in the chromates used as pigments and in chromic acid and similar substances used in electroplating - or in the trivalent form - chromium (III), as used in leather tanning. Thus the two types were listed separately, with chromium (III) receiving the lower risk score. One submission provided data which enabled the panel to reassess the scoring of chromium (III), leading to its lower ranking.

Metal speciation is a complex matter, and reporting practice is expected to evolve so as to provide more meaningful results than simply metal totals.

5.3 Aluminium(fume and dust), Alumina

Aluminium was considered by the Panel in two ways; as aluminium (fume and dust) and as alumina (or aluminium oxide).

Highly dispersed dry forms of aluminium and aluminium compounds were originally considered for listing on the NPI. 'Dust' refers to solid particles generated by any mechanical processing of aluminium including crushing, grinding, handling, and decrepitation of aluminium ores, and metal. 'Fume' refers to an airborne dispersion consisting of smaller solid particles created by condensation from a gaseous state, as distinct from the gas or vapour itself, and normally arises from the heating of aluminium metal.

However, during consultation, the Panel were presented with evidence that aluminium fume and dust do not constitute a greater hazard than that scored in connection with its being particulate matter. Particles have received a high risk score and are further discussed below.

Aluminium oxide was also considered by the Panel as one candidate substance amongst over 400 substances. However, on further investigation the Panel concluded that only a specific form of aluminium oxide, the fibrous form, was at issue. The Panel also discovered that aluminium oxide (fibrous form) related only to aircraft manufacturing, an industry not generally present in Australia, and concluded that the substance was not widely emitted in Australia. The resulting low exposure score allocated by the Panel meant that aluminium oxide (fibrous form) was not considered any further. Many of the 400 plus substances considered by the Panel fell into a similar category, that is of sufficiently low exposure not to warrant further consideration.

5.4 Particulate Matter

That small particles impact on human health is widely accepted, and it is known that particles consist of organic or inorganic matter, and sometimes combinations of both with organics adsorbed onto inorganic material. The predominant standard has consisted in measurement of the mass of particles of size 10 µm or smaller - designated PM_{10} - but there is increasing emphasis

on smaller particles - $PM_{2.5}$ or even $PM_{1.0}$ - as those presenting the greatest hazard. Several submissions raised the question of reporting the smaller particles.

Most jurisdictions have in place PM_{10} monitoring programs, and there exist data upon which trend analyses can be based, and so the Panel opted for PM_{10} as the 'substance' to be considered for the NPI. In doing so, however, the Panel recommended that jurisdictions should envisage a move to the reporting of smaller particles - either $PM_{2.5}$ or $PM_{1.0}$ - and prepare themselves for it. Specific attention should be directed to this point in any review of the reporting list.

There will exist a problem for facilities in determining when the threshold for particulate matter has been reached, since few applications would call for 10 tonne of particles of 10 μm or less. More likely, such particles will be among the emissions from mining and quarrying operations, from coal and ore stockpiles, and from operations such as sand blasting. There will also be, in many locations, considerable non-anthropogenic background concentrations. The Panel took an interest in this matter, even though monitoring was beyond its brief, but was unable to offer useful advice.

The Panel notes that the final Measure agreed by NEPC only provided for combustion thresholds (2a and 2b) for Particulate Matter and recommends that non-combustion thresholds for Particulate Matter be considered at a later stage, informed by the results of the various trials now being conducted.

5.5 Nutrients

Total nitrogen and phosphorus refers to the capacity of the emission to result in nitrates and phosphates in aqueous solution, and reporting is limited to those nitrogen and phosphorus compounds that give rise to nitrate and phosphate ions respectively. For the purpose of threshold determinations, and this is the same concept as for metals, the entire weight of the nitrogen or phosphorus compound must be included in calculations. For the purpose of reporting releases, only the weight of the nitrate and phosphate ions should be included in calculations. The reporting of these species thus differs from the approach described above for speciation in the reporting of releases of metals.

Some submissions questioned the inclusion of phosphorus, especially, on the NPI reporting list since it is a natural substance and is widely disseminated into the environment by a number of activities, and is not included in either the US or Canadian Toxics Release Inventory. The relevant activities in Australia include animal excretion (500,000 tonne), sewage (11,000 tonne), fertilisers (350,000 tonne) and other industries (5000-10,000 tonne), all calculated as elemental phosphorus. Surely, it was argued, if emissions from point sources such as sewage works, intensive husbandry as in pig and fish farms, abattoirs, and industrial facilities were to be monitored, then so should farms contributing run-off. The Panel, in considering the matter, noted that while environmental monitoring was expected to give information about the effect of diffuse sources such as agricultural land, it was nonetheless important for point sources to be reporting their emissions. The perspective

provided by the two types of monitoring could be used to confirm the minor role played by the latter.

Ammonia, although listed separately, would also contribute to total nitrate and so needs to be accounted for under this heading, as well. In the list, ammonia (total) refers to the total of both ammonia (NH_3 CASR number 7664-41-7) and the ammonium ion (NH_4^+) in solution.

5.6 Chlorine

Substances giving rise to chlorine, such as hypochlorite, should be included when determining whether the chlorine threshold has been exceeded, but emissions should be reported as chlorine.

5.7 Phenols

Because of great similarities in chemical and biological properties between phenol and simple substituted phenols (cresols and xylenols), and the fact that mixtures are often encountered in industrial applications, facilities may choose to consider all such phenols as 'phenol' when measuring against the threshold and when reporting their emissions.

5.8 2-Alkoxyethanols

The alkoxy ethanols were initially treated as a group, but it became clear that those with longer alkyl chains were markedly less toxic than their lower homologues. Examination of toxicological data contained in a substantial report (NICNAS Priority Existing Chemical Report No. 6, October 1996), enabled the Panel to score 2-methoxyethanol, 2-ethoxyethanol and 2-butoxyethanol separately, as a result of which only the first two found their way onto the reporting list. The propoxy homologue seems to be little used.

5.9 Acids

A number of acids are included in the reporting list. The panel discussed whether the concern which led to consideration of these substances was over their acidic nature, and potential for lowering pH of media and of inflicting chemical burns, or whether the non-hydrogen portions of the molecules - sulfate, chloride, acetate, nitrate and phosphate - were significant factors in their inclusion. Noting that the last two on this list would be reported under total nitrogen and phosphorus, the Panel affirmed that it was acidity that was the focus of consideration, and that any acid which had been neutralised should not be subject to reporting except to the extent that the neutral salt might come under some other heading.

5.10 Glutaraldehyde

It was contended, during the consultation period, that glutaraldehyde was so rapidly destroyed in the (aqueous) environment that it did not merit listing. In responding, the Panel noted that the scoring process had taken account of this low persistence attribute, but that other component scores (especially quantity released) had been substantial enough to see glutaraldehyde placed on the reporting list.

5.11 Vinyl Chloride Monomer

The converse situation was encountered with vinyl chloride monomer (VCM), which is handled in large quantities by the petrochemical industry and is known to be hazardous. Industry argued that earlier concerns about VCM had led to their operating in 'zero release' fashion and that this should have been reflected in low exposure scores and seen VCM relegated from the list. Others in the consultation period, possibly reacting to the past concerns which had brought about such good practice, pressed for retention of VCM on the list. The Panel agreed to retain the substance, but noted in correspondence that the users would appear in an excellent light if they were able to submit a 'nil' return for emissions despite handling large quantities of VCM and might subsequently mount a strong case against the current exposure score allocated by the Panel.

5.12 Volatile Organic Compounds (VOCs)

Volatile organic compounds (VOCs) in the atmosphere may react with nitrogen oxides in complicated fashion to produce ozone which, at low altitudes, is a serious pollutant. Substances which would be included in the

VOC category include aliphatic hydrocarbons (such as hexane), aromatic hydrocarbons (such as benzene, toluene, and the xylenes), and oxygenated compounds (such as acetone and similar ketones). The major industrial sources of VOCs in Australian cities are petrol refining and fuel storage, followed by motor vehicles themselves, and manufacturing industry. However, there are significant non-anthropogenic sources, since most state capitals are adjacent to areas of bush which emit volatile oils. In the Brisbane area, for instance, such sources contribute (and are expected to continue to contribute) 60% of the observed VOCs.

Notwithstanding this broad dichotomy of sources, aggregate VOC levels are measured or estimated/modelled in some jurisdictions, and it has been suggested that such a category should be included in the NPI. It is relevant to note, at this point, that VOCs are not included among the substances to be monitored under the proposed ambient air quality NEPM, which does, however, include nitrogen oxides (the co-reactant) and ozone (the product of the reactions).

The reporting list recommended by the Panel already includes a number of the anthropogenic VOC components: acetone, benzene, butadiene, methanol, methyl ethyl ketone, methyl isobutyl ketone, toluene and xylenes in the initial group, with acetaldehyde, cumene, cyclohexane, ethyl benzene, hexane, and styrene to be added the following year. Thus, it might be argued, that all or most of the substances of concern will be included in the NPI within a few years, thus giving the information which might have been achieved by the inclusion of a 'VOC' category.

A counter argument on this latter point, would be that it is nonetheless of interest to know the VOC total, since this represents the mass of substances that can take part in the ozone-forming reactions. There is a tacit assumption here, that each individual substance reacts in roughly the same fashion and that adding the amounts of the separate components without weighting them is a valid process. A further point to consider is that individual components of the VOC mix may fall below the threshold and so not be reported, even though the reactive total is large enough to be of concern.

Although no protocol was developed for scoring mixtures of diverse substances (as opposed to closely similar groups such as the xylenes or manganese compounds), it would seem appropriate to assign to the VOCs as a group a 'second order' score, in much the same way as was done for dissolved nitrogen and phosphorus species, which may give rise to nitrate and phosphate which produce undesired biological effects. When this procedure was followed for VOCs by taking toluene as a typical substance and replacing its 'environment' score with a score of 3 for the second-order effects, we derive an overall risk score of 9, roughly equivalent to those of xylenes and butadiene.

Such a procedure, basically sound although distinctly pragmatic, would put VOCs into the first reporting list.

Panel members differed on the merits of including VOCs, but there was a small majority for not including VOCs as a separate category, given that (i) so many of the important components would be the subject of separate reporting

in either the first or second stage of implementation of the NPI, (ii) non-anthropogenic sources of VOCs would be important in many areas, (iii) the co-reactants of VOCs, the nitrogen oxides, are included in the NPI as well as the ambient air quality NEPM, and (iv) the reason for monitoring and/or estimating VOCs was really the gaining of information about the formation of ozone; VOC concentration was a surrogate, albeit not a very good one, for ozone concentration, and in any case ozone was to be measured under the ambient air quality NEPM.

Having regard to these arguments, however, and realising that data on releases of VOCs could be compared with those gained through diffuse monitoring, it is clear that having VOCs on the reporting list does not in any serious way go against the advice of the Technical Advisory Panel.

Chapter 6

Agricultural and Veterinary Chemical and the National Pollutant Inventory

6.1 The General Approach

The Panel was asked to consider the issue of agricultural and veterinary (AgVet) substances in the context of the National Pollutant Inventory.

In reaching its position reported here, the Panel was obliged to review a number of issues of a policy nature relating to AgVet substances:

- a process for selecting AgVet substances;
- previous discussion of whether or not AgVets should be included in the NPI;
- other aspects of this issue not previously raised; and
- issues associated with who would report.

6.2 Selecting Agricultural and Veterinary Substances

The Panel's terms of reference state that it is to: develop criteria for the selection of substances; assess a range of substances against those criteria; and then recommend whether individual substances should be on a reporting list. Given that the Panel has been asked to consider AgVet substances, and putting related issues to one side for the moment, the Panel has attempted to meet its terms of reference by:

- examining the range of AgVet substances;
- considering criteria to assess those substances;
- evaluating different sets of criteria; and
- providing some conclusions on this for Project team and NEPC Committee consideration.

6.2.1 The range of Agricultural and Veterinary Substances

There is a national scheme for the regulation of Agricultural & Veterinary chemicals in Australia. It is administered by the National Registration Authority for Agricultural & Veterinary Chemicals (NRA), a statutory authority within the portfolio of the Ministry of Primary Industry and Energy. The NRA regulates AgVet chemicals up to the point of sale, but legislation regulating the control of use rests with the States and Territories.

There are some 600 chemicals currently registered in approximately 7000 products by the National Registration Authority (NRA). This figure does not include non-active product constituents. New actives are being added at a rate of 5-15 per annum. In the Panel's view, this NRA list would represent a reasonable 'universe of substances' in which to consider potential inclusions on an NPI reporting list. However, the task of compiling all of the toxicological and emission data necessary to screen and prioritise such a list of chemicals by the processes outlined in Chapters 1 and 2 would be greater than that for the industrial substances already considered and is well beyond the resources of this Panel, given its timeframe.

6.2.2 Prioritisation already achieved through ECRP

The NRA's Existing Chemicals Review Programme (ECRP) could serve as a preliminary screening tool to prioritise chemicals for an AgVet substance module in the NPI. The ECRP is a subset of the larger NRA list and represents those substances assessed to be of sufficient interest to be reviewed. The current ECRP is outlined in Appendix VIII.

In 1994-95, four agencies working with the Review Programme (NRA, Health, Environment, and Worksafe Australia) conducted an extensive review of their databases on AgVet substances prior to making priority recommendations to the NRA Board. After a further process of public nomination and consultation, the NRA Board published a priority list of 80 chemicals which would form the basis for the ECRP. Five of these chemicals were selected for the first review cycle (atrazine, mevinphos, parathion, parathion-methyl, and endosulphan). Following a further period of data call-in and public submissions, work has been proceeding on the formal review of these five chemicals. Final reports are expected to be published in 1997-1998.

Work has now also commenced on the data call-in phase for second cycle of eight chemicals (chlorpyriphos, chlorfenvinphos, demeton-S-methyl, diazinon, dichlorvos, ethylene dibromide, fenitrothion, and monocrotophos).

It should be noted that there may be no need to proceed to a formal ECRP review for some chemicals initially included in the priority list of 80 (notably the chlorinated cyclodiene insecticides), because regulatory actions to remove them from registration and use may have already overtaken events. It would therefore be questionable whether such chemicals should be included in an AgVet substance module of the NPI list, provided that such regulatory controls remove the potential for further environmental emissions.

6.2.3 Further criteria for Agricultural and Veterinary substances

If it were proposed to use the ECRP process to select the range of substances, consideration would need to be given to the criteria developed by the ECRP. The ECRP Programme has incorporated an objective and transparent prioritisation process which has been published. The process incorporates many of the elements of the Panel's preferred scoring process, although there are some important differences, because the Panel's criteria have been developed with industrial pollutants in mind and so might not be adequate for the selection of AgVet substances.

Despite the broad similarities, some elements of the ECRP prioritisation processes are different from, or additional to, those covered in Chapter 2. These include: separate scoring of occupational health and public health risks; consideration of the adequacy or completeness of the toxicological database; whether there have been international regulatory restrictions imposed; whether any problems with product efficacy had been identified; potential trade impacts where food commodities contain unplanned chemical residues, or where appropriate maximum residue standards (MRLs) have not been established by trading partners or the international community; and finally, community concerns about these issues as expressed in a public nomination process, which may be inappropriate in the NPI. In relation to hazard, the ECRP prioritisation process used a weighted scoring system which addressed: acute and chronic toxicity hazards to humans; ecotoxicological properties; environmental persistence, and bioaccumulation. It did not include a score analogous to the exposure or environmental fate score outlined in Chapter 2.

In addition, it seems likely that application of the reporting thresholds outlined in Chapter 4 could exclude most sources of potential environmental emission for AgVet substances from requirements to report.

The full detail of the ECRP prioritisation processes is attached at Appendix VIII.

In the work undertaken by the Panel, there were 45 chemicals with potential AgVet uses included in the master list on the basis of their PAAN scores or EC Risk Phrase listing. Of these, 19 were also included among the 80 chemicals in the ECRP priority list. However, with the exception of arsenic, 1,2-dibromoethane, and endosulphan, none of these AgVets achieved a high ranking on the NPI list, because of low estimates (in many cases zero, since they are no longer used) for the environmental exposure score. Furthermore, while AgVet substances could achieve relatively high scores on acute and chronic toxicity indices, effective regulatory oversight should have ensured that it would be less likely for AgVet substances still in wide-scale use to achieve high scores on the carcinogenicity and reproductive toxicity indices.

Should the decision be made to include AgVets in the NPI, and further technical work be undertaken, the Panel believes it may be preferable to adopt an approach to prioritisation which differs from that used in ranking other chemicals on the main NPI list.

6.2.4 Conclusions in selecting Agvet substances for the National Pollutant Inventory

The criteria developed for the industrial substances do not readily suit AgVet substances. Nonetheless the Panel has considered the application of the methodology developed in Chapters 1 and 2 of this report to AgVet substances and in doing so has identified a number of additional outstanding technical issues highlighted in 6.2.2 and in 4.3.

However there exists an established system for assessing the effects of AgVet substances in the NRA which could be used in place of the system adopted by the Panel as discussed in Chapters 1 and 2. It is quite feasible to generate a ranking using the criteria as outlined in Appendix IX, but this would require time and resources that were not currently available to the Panel.

6.3 Other issues impacting on the selection of agricultural and veterinary substances

In considering how to select AgVet substances for the NPI the Panel has come across a number of other important issues which would need to be considered before any decision can be made on how or whether to select substances for the NPI. These matters were not resolved by the Panel, and for the time being AgVets will not be reported under the NPI, but the points below need to be taken into consideration whenever this matter is reconsidered.

6.3.1 General considerations

In most instances, the use of AgVet chemicals constitutes a deliberate process of chemical application to crops, animals, soil, waterways in certain circumstances. It has been argued that, therefore, they are not emissions in the same sense as most NPI releases. However, because AgVet chemicals can represent significant emissions to the environment, particularly to off-target sites such as waterways and adjacent sites inhabited by people or livestock, strong expressions of 'community right-to-know' lead to pressures to include AgVet chemicals.

6.3.2 Veterinary substances

Veterinary chemicals have so far, in this chapter, not been considered as a distinct class within the broader group of agricultural and veterinary substances. This was possibly based on the perception that emission of veterinary chemicals to the environment is likely to be minimal. While this may be true for certain classes of veterinary chemicals (for example pet care and animal therapeutic products), it may not necessarily be true for chemicals used on a large scale in food-producing animals (for example: ectoparasiticide dips and sprays; growth promotants and other chemicals which may be present in animal excreta) or for those used in commercial aquaculture.

6.3.3 Domestic and other uses

Not all chemicals registered by the NRA are destined for use in broad scale agriculture or veterinary practice involving mass medication. Many of the pesticides registered by the NRA are used by professional pest controllers and the general public/workforce in the control of pest plants, animals and organisms in commercial buildings, in and around domestic premises and in areas under the jurisdiction of local governments. These chemicals may include: insecticides, termiticides, herbicides, turf pesticides and water treatment chemicals.

The Panel notes that, although no single domestic user is likely to approach the 10 tonne threshold, any future consideration of AgVets and thresholds for them would need to be mindful of domestic uses.

6.3.4 Non-active constituents

While the primary focus in AgVet chemical registration has conventionally been directed towards active constituents, it must be recognised that the concentration of active ingredients in AgVet products may only comprise a small percentage of the total. AgVet products are often formulated with a range of solvents, surfactants, dispersants, emulsifiers etc to improve their use characteristics. Sometimes these "inactive" ingredients may have significant toxicological properties in their own right. Often, the identity and composition of these formulation "inactives" is a commercially sensitive secret.

Sometimes the addition of a solvent occurs after the formulation and storage of the AgVet products, for instance, during use (eg: the preparation of sprays by dilution with aqueous and non-aqueous solvents such as petroleum distillates).

AgVet formulation ingredients (particularly organic solvents) may already be included in the NPI on the basis of their other industrial uses. Their presence in AgVet products may complicate the compilation of emission data. If AgVets are included in the NPI, then triggering a reporting threshold for an active may also require the inclusion of data on solvents or surfactants. On the other hand, if AgVet **actives** are not included in the NPI, manufacturers and users of AgVet products may be unaware of a reporting obligation if the volume of solvent or other "inactive ingredient" inadvertently exceeds reporting thresholds. Although this relates to how the information is reported it does impact on whether individual substances need to be given different thresholds.

6.4 Who would report?

In examining how AgVet substances might be selected for inclusion in an NPI reporting list the Panel also needed to consider the issue of who might report. Who reports is an important consideration in designing thresholds for reportable substances and AgVet substances bring different threshold considerations.

Whereas industrial substances, whose emissions can be considered for the most part pollutants, are generally emitted in the urban environment and at a reasonably constant rate, application and emissions of AgVet substances have a different pattern.

The potential emission to the environment of AgVet chemicals has few of the characteristics of point source emissions. While points of manufacture and/or formulation of AgVet products may be relatively discrete sites and susceptible to data collection processes applicable to other point-source NPI chemicals, potential AgVet chemical emission to the environment can also occur during transport, storage (both in distribution depots and in farmer/householder storage facilities), during application or usage, and ultimately by improper disposal of unused product or containers which may be "empty" or only partially empty.

In addition the Panel notes that many parts of this cycle are subject to regulatory control, albeit across different jurisdictions. Use patterns which have the highest potential for off-target dispersion (for example, a spray drift), and contamination of local water supplies (for example. ground water, reservoirs, streams, household tanks and bores) are likely to raise the most community concern and are probably of greatest significance in terms of the NPI.

The issue of how an NPI could capture useful data on the environmental emissions of AgVet chemicals is a difficult one to resolve in the context of developing thresholds for an NPI reporting list.

Application of the proposed general reporting thresholds (Chapter 3) would probably exclude individual farmers, spraying contractors and pest control operators from reporting obligations. It is clear that the NPI Reference Group considered this to be an important policy element since the NPI is not intended to be a burden on small business. This would leave manufacturers and larger distribution outlets as the main reporting sources. Data from such sources might lack regional focus and be difficult to relate to actual emissions to the environment. It is assumed that modelling techniques analogous to those used for estimating NPI diffuse emissions would need to be developed in order to collect regionally meaningful data on AgVet chemical emissions.

6.5 Conclusions

The Panel has considered the incorporation of AgVet substances into the NPI, and found that this can done but that the scoring for these substances sits uncomfortably with that for more generally industrial substances. In contrast to the situation with these industrial substances, little prior work had been done on attempting to score and rank AgVet substances.

The Panel notes that in conjunction with decisions on how AgVet substances might be selected for inclusion in the NPI, other outstanding issues - often more of a policy nature than technical - would need to be resolved. The Panel recommends that the Committee should seek views on resolving these outstanding policy issues before commissioning the development of new or modified criteria suitable for selecting and ranking AgVet substances.

Appendix I

Terms of Reference for the Technical Advisory Panel

The Technical Advisory Panel will report to the NEPC Committee via the Project Chair.

The time available for Technical Advisory Panel deliberations is restricted and the Panel must provide recommendations to the Project Chair by 4 April 1997. The Panel should note that there may be additional issues to consider both during and following the statutory NEPC consultation period, and further direction will be provided by the NEPC Committee via the Project Chair as required.

1. Criteria

The first task of the Technical Advisory Panel will be to evaluate and refine the following criteria:

1(a) Hazard: The panel should consider, refine and produce a set of definitions (including cut-off points) consistent with Australia's approach to public health, occupational health and environmental assessment with respect to the following criteria: acute and chronic toxicity, persistence in the environment, ecological impact, carcinogencity, bioaccumulation, or reproductive effects.

1(b) Risk: In addition to hazard criteria the panel should consider the risk posed by the substance in the Australian environment including, but not limited to, the following:

- whether, and the extent to which, a substance is used or emitted in Australia; and
- information on the likelihood of exposure to a substance.

2. Assessment

Once the criteria have been agreed by the NEPC Committee the Technical Advisory Panel will assess candidate substances to the reporting list against the finalised criteria.

2 In formulating its advice to the NEPC Committee, the Technical Advisory Panel will take account of:

- the goals and guidelines of the NPI as discussed in the Information Bulletin;
- available information on human health, ecological and environmental effects of substance proposed for the reporting list, including assessments of nominated substances proposed for other purposes particularly those where full scientific risk-based assessments have been carried out;
- the significance of human health, environmental and ecological effects;

- whether information on emissions of a nominated substance is already collected by an existing mechanism, noting any restrictions on that information
- relevant international reporting obligations that Australia has;
- any supplementary additional information provided by jurisdictions; and
- other advice provided to it by Council.

3. Recommendations

The Technical Advisory Panel will:

3(a) Recommend:

- whether a substance should be included or not on the reporting list; and
- if a substance is recommended to be included, its relative priority, compared to other substances for inclusion on the reporting list.

3(b) When recommending a substance the Panel should advise the following:

- details of hazard and risk;
- a suggested threshold or range of thresholds which should be used to determine reporting for classes of facilities and an assessment of which facilities might report; and
- if possible, advice on indicator(s) for evaluating the effect which listing a substance might have with respect to desired health, environmental and ecological outcomes.

Appendix II

Alphabetically-ordered reporting list of substances for the National Pollutant Inventory
(determined by consideration of health and environmental risks in Australia)

1. In this Schedule:
   (a) the threshold for category 1 acids refers to the amount of the acid compound used (for example, in the case of "Hydrochloric acid", the threshold refers to the amount of hydrogen chloride used). This amount can be calculated as a factor of volume and concentration;
   (b) the thresholds for "total Nitrogen" and "total Phosphorus" refer only to the amounts of those Nitrogen and Phosphorus compounds that give rise to nitrate / nitrite and phosphate ions respectively;
   (c) the threshold for "Ammonia (total)" refers to the total amount of both ammonia (NH_3 CASR number 7664-41-7) and the ammonium ion (NH_4^+) in solution;
   (d) the threshold for "Chlorine" includes the amount of hypochlorite and like substances used;
   (e) the threshold for category 1 substances that are listed as "(a metal) & compounds" refers to the total amount of the metal and its compounds used (for example, "Lead & compounds" refers to Lead and all compounds which incorporate Lead);
   (f) the threshold for "Phenol" (CASR number 108-95-2) refers, at the discretion of the reporting facility, to either the total amount of phenolic compounds used or the total amount of phenol used.

2. For the purposes of estimating emission data to be reported under clause 9 of the Measure:
   (a) the amount of a category 1 acid emitted refers to the amount of the actual acid compound emitted (for example, in the case of "Hydrochloric acid", the amount emitted refers to the amount of hydrogen chloride emitted). It does not include any amounts of the acid that have been neutralised before release as the acid no longer exists;
   (b) the amounts of "total Nitrogen" and "total Phosphorus" emitted refer to the amounts of those Nitrogen and Phosphorus compounds emitted that give rise to nitrate / nitrite and phosphate ions respectively;
   (c) the amount of "Ammonia (total)" emitted refers to the total amount of both Ammonia (NH_3 CASR number 7664-41-7) and the ammonium ion (NH_4^+) emitted in solution;
   (d) the amount of "Chlorine" emitted refers only to the amount chlorine (Cl CASR number 7782-50-5) emitted;
   (e) the amount emitted in relation to a substance listed as "(a metal) & compounds" refers only to the amount of the metal emitted (for example, the amount of "Lead & compounds" emitted refers only to the amount of Lead emitted);
   (f) the amount of "Phenol" (CASR number 108-95-2) emitted refers, at the discretion of the reporting facility, to either the total amount of phenolic compounds emitted or the total amount of Phenol emitted.

Table 1

prefix	COLUMN 1 SUBSTANCE	COLUMN 2 CASR No.	COLUMN 3 THRESHOLD CATEGORY	COLUMN 4 THRESHOLD
	Acetone	67-64-1	1	10 tonnes per year
	Arsenic & compounds	7440-38-2	1	10 tonnes per year
			2b	2,000 tonnes per year, or or 60,000 megawatt hours, or rated at 20 megawatts
	Benzene	71-43-2	1	10 tonnes per year
1,3-	Butadiene (vinyl ethylene)	106-99-0	1	10 tonnes per year
	Cadmium & compounds	7440-43-9	1	10 tonnes per year
			2b	2,000 tonnes per year, or or 60,000 megawatt hours, or rated at 20 megawatts
	Carbon monoxide	630-08-0	1	10 tonnes per year
			2a	400 tonnes per year, or 1 tonne per hour
	Chromium (VI) compounds	7440-47-3	1	10 tonnes per year
			2b	2,000 tonnes per year, or or 60,000 megawatt hours, or rated at 20 megawatts
	Cobalt & compounds	7440-48-4	1	10 tonnes per year
	Cyanide (inorganic) compounds	N / A	1	10 tonnes per year
1,2-	Dibromoethane	106-93-4	1	10 tonnes per year
	Dichloromethane	75-09-2	1	10 tonnes per year
2-	Ethoxyethanol	110-80-5	1	10 tonnes per year
2-	Ethoxyethanol acetate	111-15-9	1	10 tonnes per year
	Ethylene glycol (1,2-ethanediol)	107-21-1	1	10 tonnes per year
	Fluoride compounds	N / A	1	10 tonnes per year
			2a	400 tonnes per year, or 1 tonne per hour
	Glutaraldehyde	111-30-8	1	10 tonnes per year
	Lead & compounds	7439-92-1	1	10 tonnes per year
			2b	2,000 tonnes per year, or or 60,000 megawatt hours, or rated at 20 megawatts
	Mercury & compounds	7439-97-6	1	10 tonnes per year
			2b	2,000 tonnes per year, or or 60,000 megawatt hours, or rated at 20 megawatts
	Methanol	67-56-1	1	10 tonnes per year
	Methyl ethyl ketone	78-93-3	1	10 tonnes per year
	Methyl isobutyl ketone	108-10-1	1	10 tonnes per year
	Methyl methacrylate	80-62-6	1	10 tonnes per year

prefix	COLUMN 1 SUBSTANCE	COLUMN 2 CASR No.	COLUMN 3 THRESHOLD CATEGORY	COLUMN 4 THRESHOLD
	Nickel carbonyl	13463-39-3	1	10 tonnes per year
			2b	2,000 tonnes per year, or or 60,000 megawatt hours, or rated at 20 megawatts
	Nickel subsulphide	12035-72-2	1	10 tonnes per year
			2b	2,000 tonnes per year, or or 60,000 megawatt hours, or rated at 20 megawatts
	Oxides of Nitrogen	N / A	2a	400 tonnes per year, or 1 tonne per hour
	Particulate Matter 10.0 um	N / A		
			2a	400 tonnes per year, or 1 tonne per hour
	Polycyclic aromatic hydrocarbons	N / A	2a	400 tonnes per year, or 1 tonne per hour
	Sulphur dioxide	7446-09-5	1	10 tonnes per year
			2a	400 tonnes per year, or 1 tonne per hour
	Sulphuric acid	7664-93-9	1	10 tonnes per year
	Tetrachloroethylene	127-18-4	1	10 tonnes per year
	Toluene (methylbenzene)	108-88-3	1	10 tonnes per year
	Toluene-2,4-diisocyanate	584-84-9	1	10 tonnes per year
	Total Nitrogen	N / A	3	15 tonnes per year
	Total Phosphorus	N / A	3	3 tonnes per year
	Trichoroethylene	79-01-6	1	10 tonnes per year
	Xylenes (individual or mixed isomers)	1330-20-7	1	10 tonnes per year

Table 2

prefix	COLUMN 1 SUBSTANCE	COLUMN 2 CASR No.	COLUMN 3 THRESHOLD CATEGORY	COLUMN 4 THRESHOLD
	Acetaldehyde	75-07-0	1	10 tonnes per year
	Acetic acid (ethanoic acid)	64-19-7	1	10 tonnes per year
	Acetone	67-64-1	1	10 tonnes per year
	Acetonitrile	75-05-8	1	10 tonnes per year
	Acrylamide	79-06-1	1	10 tonnes per year
	Acrylic acid	79-10-7	1	10 tonnes per year
	Acrylonitrile (2-propenenitrile)	107-13-1	1	10 tonnes per year
	Ammonia (total)	N / A	1	10 tonnes per year
	Aniline (benzenamine)	62-53-3	1	10 tonnes per year
	Antimony & compounds	7440-36-0	1	10 tonnes per year
	Arsenic & compounds	7440-38-2	1	10 tonnes per year
			2b	2,000 tonnes per year, or or 60,000 megawatt hours, or rated at 20 megawatts
	Benzene	71-43-2	1	10 tonnes per year
	Benzene hexachloro- (HCB)	608-73-1	1	10 tonnes per year
	Beryllium & compounds	7440-41-7	1	10 tonnes per year
			2b	2,000 tonnes per year, or or 60,000 megawatt hours, or rated at 20 megawatts
	Biphenyl (1,1-biphenyl)	92-52-4	1	10 tonnes per year
	Boron & compounds	7440-42-8	1	10 tonnes per year
1,3-	Butadiene (vinyl ethylene)	106-99-0	1	10 tonnes per year
	Cadmium & compounds	7440-43-9	1	10 tonnes per year
			2b	2,000 tonnes per year, or or 60,000 megawatt hours, or rated at 20 megawatts
	Carbon disulphide	75-15-0	1	10 tonnes per year
	Carbon monoxide	630-08-0	1	10 tonnes per year
			2a	400 tonnes per year, or 1 tonne per hour
	Chlorine	7782-50-5	1	10 tonnes per year
	Chlorine dioxide	10049-04-4	1	10 tonnes per year
	Chloroethane (ethyl chloride)	75-00-3	1	10 tonnes per year
	Chloroform (trichloromethane)	67-66-3	1	10 tonnes per year
	Chlorophenols (di, tri, tetra)	N / A	1	10 tonnes per year
	Chromium (III) compounds	7440-47-3	1	10 tonnes per year
			2b	2,000 tonnes per year, or or 60,000 megawatt hours, or rated at 20 megawatts
	Chromium (VI) compounds	7440-47-3	1	10 tonnes per year
			2b	2,000 tonnes per year, or

prefix	COLUMN 1 SUBSTANCE	COLUMN 2 CASR No.	COLUMN 3 THRESHOLD CATEGORY	COLUMN 4 THRESHOLD
				or 60,000 megawatt hours, or rated at 20 megawatts
	Cobalt & compounds	7440-48-4	1	10 tonnes per year
	Copper & compounds	7440-50-8	1	10 tonnes per year
			2b	2,000 tonnes per year, or or 60,000 megawatt hours, or rated at 20 megawatts
	Cumene (1-methylethylbenzene)	98-82-8	1	10 tonnes per year
	Cyanide (inorganic) compounds	N / A	1	10 tonnes per year
	Cyclohexane	110-82-7	1	10 tonnes per year
1,2-	Dibromoethane	106-93-4	1	10 tonnes per year
	Dibutyl phthalate	84-74-2	1	10 tonnes per year
1,2-	Dichloroethane	107-06-2	1	10 tonnes per year
	Dichloromethane	75-09-2	1	10 tonnes per year
	Ethanol	64-17-5	1	10 tonnes per year
2-	Ethoxyethanol	110-80-5	1	10 tonnes per year
2-	Ethoxyethanol acetate	111-15-9	1	10 tonnes per year
	Ethyl acetate	141-78-6	1	10 tonnes per year
	Ethyl butyl ketone	106-35-4	1	10 tonnes per year
	Ethylbenzene	100-41-4	1	10 tonnes per year
	Ethylene glycol (1,2-ethanediol)	107-21-1	1	10 tonnes per year
	Ethylene oxide	72-21-8	1	10 tonnes per year
	Di-(2-Ethylhexyl) phthalate (DEHP)	117-81-7	1	10 tonnes per year
	Fluoride compounds	N / A	1	10 tonnes per year
			2a	400 tonnes per year, or 1 tonne per hour
	Formaldehyde (methyl aldehyde)	50-00-0	1	10 tonnes per year
	Glutaraldehyde	111-30-8	1	10 tonnes per year
n-	Hexane	110-54-3	1	10 tonnes per year
	Hydrochloric acid	7647-01-0	1	10 tonnes per year
			2a	400 tonnes per year, or 1 tonne per hour
	Hydrogen sulphide	7783-06-4	1	10 tonnes per year
	Lead & compounds	7439-92-1	1	10 tonnes per year
			2b	2,000 tonnes per year, or or 60,000 megawatt hours, or rated at 20 megawatts
	Magnesium oxide fume	1309-48-4	1	10 tonnes per year
			2b	2,000 tonnes per year, or or 60,000 megawatt hours, or rated at 20 megawatts
	Manganese & compounds	7439-96-5	1	10 tonnes per year

prefix	COLUMN 1 SUBSTANCE	COLUMN 2 CASR No.	COLUMN 3 THRESHOLD CATEGORY	COLUMN 4 THRESHOLD
	Mercury & compounds	7439-97-6	1	10 tonnes per year
			2b	2,000 tonnes per year, or or 60,000 megawatt hours, or rated at 20 megawatts
	Methanol	67-56-1	1	10 tonnes per year
2-	Methoxyethanol	109-86-4	1	10 tonnes per year
2-	Methoxyethanol acetate	110-49-6	1	10 tonnes per year
	Methyl ethyl ketone	78-93-3	1	10 tonnes per year
	Methyl isobutyl ketone	108-10-1	1	10 tonnes per year
	Methyl methacrylate	80-62-6	1	10 tonnes per year
4,4-	Methylene bis 2,4 aniline (MOCA)	101-14-4	1	10 tonnes per year
	Methylenebis (phenylisocyanate)	101-68-8	1	10 tonnes per year
	Nickel & compounds	7440-02-0	1	10 tonnes per year
			2b	2,000 tonnes per year, or or 60,000 megawatt hours, or rated at 20 megawatts
	Nickel carbonyl	13463-39-3	1	10 tonnes per year
			2b	2,000 tonnes per year, or or 60,000 megawatt hours, or rated at 20 megawatts
	Nickel subsulphide	12035-72-2	1	10 tonnes per year
			2b	2,000 tonnes per year, or or 60,000 megawatt hours, or rated at 20 megawatts
	Nitric acid	7697-37-2	1	10 tonnes per year
	Organo-tin compounds	N / A	1	10 tonnes per year
	Oxides of Nitrogen	N / A	2a	400 tonnes per year, or 1 tonne per hour
	Particulate Matter 10.0 um	N / A		
			2a	400 tonnes per year, or 1 tonne per hour
	Phenol	108-95-2	1	10 tonnes per year
	Phosphoric acid	7664-38-2	1	10 tonnes per year
	Polychlorinated dioxins and furans	N / A	2b	2,000 tonnes per year, or or 60,000 megawatt hours, or rated at 20 megawatts
	Polycyclic aromatic hydrocarbons	N / A	2a	400 tonnes per year, or 1 tonne per hour
	Selenium & compounds	7782-49-2	1	10 tonnes per year
	Styrene (ethenylbenzene)	100-42-5	1	10 tonnes per year
	Sulphur dioxide	7446-09-5	1	10 tonnes per year
			2a	400 tonnes per year, or 1 tonne per hour
	Sulphuric acid	7664-93-9	1	10 tonnes per year

COLUMN 1		COLUMN 2	COLUMN 3	COLUMN 4
prefix	**SUBSTANCE**	**CASR No.**	**THRESHOLD CATEGORY**	**THRESHOLD**
1,1,1,2-	Tetrachloroethane	630-20-6	1	10 tonnes per year
	Tetrachloroethylene	127-18-4	1	10 tonnes per year
	Toluene (methylbenzene)	108-88-3	1	10 tonnes per year
	Toluene-2,4-diisocyanate	584-84-9	1	10 tonnes per year
	Total Nitrogen	N / A	3	15 tonnes per year
	Total Phosphorus	N / A	3	3 tonnes per year
	Total Volatile Organic Compounds	N / A	1a	25 tonnes per year, or a design capacity of 25 kilotonnes for bulk storage facilities
			2a	400 tonnes per year, or 1 tonne per hour
1,1,2-	Trichloroethane	79-00-5	1	10 tonnes per year
	Trichoroethylene	79-01-6	1	10 tonnes per year
	Vinyl Chloride Monomer	75-01-4	1	10 tonnes per year
	Xylenes (individual or mixed isomers)	1330-20-7	1	10 tonnes per year
	Zinc and compounds	7440-66-6	1	10 tonnes per year

Appendix III

Reporting list - Priority Order

1. Oxides of nitrogen
2. Chromium (VI) compounds
3. Carbon monoxide
4. Sulphur dioxide
5. Dichloromethane
6. Cadmium and compounds
7. Particulate Matter (10um)
8. Sulphuric acid
9. Xylenes (individual or mixed isomers)
10. Arsenic and compounds
11. Lead and compounds
12. Trichloroethylene
13. 1,3-Butadiene (vinyl ethylene)
14. Benzene
15. Glutaraldehyde
16. Tetrachloroethylene
17. Total Nitrogen (in solution)
18. Polycyclic aromatic hydrocarbons
19. 2-Ethoxyethanol
20. 2-Ethoxyethanol acetate
21. Methyl ethyl ketone
22. Acetone
23. Ethylene glycol (1,2 ethanediol)
24. Methanol
25. Nickel carbonyl
26. Methyl methacrylate
27. Total Phosphorus (in solution)
28. Methyl isobutyl ketone
29. Cyanide (inorganic) compounds
30. Cobalt and compounds
31. Fluoride compounds
32. Nickel subsulphide
33. Toluene (methylbenzene)
34. Toluene 2,4-disocyanate
35. Mercury and compounds
36. 1,2 Dibromoethane
37. Hydrogen sulphide
38. Phosphoric acid
39. Hydrochloric acid
40. Copper and compounds
41. Chlorine dioxide
42. Chlorine
43. Nitric acid

44. 4,4 Methylene bis 2,4 aniline (MOCA)
45. Ammonia (total)
46. Ethylene oxide
47. Magnesium oxide fume
48. Zinc and compounds
49. Acrylic acid
50. Phenol
51. Styrene (ethenylbenzene)
52. Boron and compounds
53. Biphenyl (1,1-biphenyl)
54. Nickel and compounds (not ???)
55. Formaldehyde (methyl aldehyde)
56. Carbon disulphide
57. Acetonitrile
58. Acetaldehyde
59. Methylenebis (phenylisocyanate)
60. Chromium (III) compounds
61. 1,1,2-Trichloroethane
62. Ethyl acetate
63. Acrylonitrile (2-propenenitrile)
64. Cyclohexane
65. Vinyl chloride monomer
66. Chloroform (trichloromethane)
67. 2-Ethylhexyl phthalate (DEHP)
68. Dibutyl phthalate
69. Aniline (benzenamine)
70. Cumene (1-methylethylbenzene)
71. Chloroethane (ethyl chloride)
72. Organo-tin compounds
73. 2-Methoxyethanol
74. 2-Methoxyethanol acetate
75. Manganese & compounds
76. Beryllium & compounds
77. 1,2-Dichloroethane
78. Benzene hexachloro- (HCB)
79. Chlorophenols (di,tri,tetra)
80. Acrylamide
81. Acetic acid (ethanoic acid)
82. Ethyl butyl ketone
83. Polychlorinated dioxins and furans
84. Antimony & compounds
85. Selenium & compounds
86. 1,1,2,2-Tetrachloroethane
87. Ethylbenzene
88. Ethanol
89. n-Hexane

Appendix IV

Explanatory note relating to the Table in Appendix IV

The large spreadsheet reproduced here has been subdivided to enable its presentation in A4 format. Pages 1-7 present the full list of substances consider by the Panel, and these are ranked in priority order of their risk scores. The remaining columns on these pages show some component scores and possible ways of combining them. Unused columns are shown in pp 22-28, and pp 29-42 present the alternative rankings which result from combining the component scores in different ways, as summarised at the front of the table. Details of scores assigned to the substances are given in the columns of pages 8-14 and 15-21. Thus a complete picture of data pertaining to the first sixty three substances - oxides of nitrogen to acrylonitrite - is obtained by examining pages 1,8 and 15.

			PAN	PAN	EC	AICS	Gen	NPI		Scores (normalised)								Scores (maximum)								(Harley Wright)												Hlth	1	2	Acute Toxicity					Chronic Toxicity					Carcinogenicity			
prefix	Substance Name	CAS No	List	Rank	List			Risk	Rank	Hlth	Env	Exp	H+En+Ex		(H+En)xEx		(HxEnxEx)		Hlth	Env	Exp	H+En+Ex		(H+En)xEx		(HxEnxEx)		A H		C H		A E		C E						Env	1	2	Dflt	EC				Dflt	EC				Dflt	EC			
																												/exp		/exp		/exp		/exp		Max	Rank	Ave	Rank	Exp	1	2		Vtox	Tox	Harm	Tot		1	2	3	Tot		1	2	3
	Count		141	146	360	296	41	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391		55	82	148	61	143	198	391	147	33	100	0	391	146	9	30	31
							Option	2					Option 1		Option 2		Option 3					Option 4		Option 5		Option 6		Options 7-8								8		7	Option	9	10														
	Oxides of Nitrogen	N/A	✓	148	✓		✓	13.5	1	1.5	3.0	3.0	7.5	1	13.5	1	13.5	1	3	3	3	9	1	18	1	27	1	6.0	1	3.0	33	3.0	92	6.0	1	6.0	1	4.5	1		✓	✓		✓	✓		3				0				
	Chromium (VI) compounds	7440-47-3	✓	2	✓	✓	✓	9.6	2	2.5	3.0	1.8	7.3	2	9.6	2	13.1	2	3	3	3	9	1	18	1	27	1	4.8	8	3.8	17	4.8	2	4.8	2	4.8	8	4.5	1		✓	✓	2	✓	✓	✓	3	3		✓		2	3		✓	
	Carbon monoxide	630-08-0	✓	25	✓	✓		8.5	3	2.0	0.8	3.0	5.8	5	8.5	3	5.0	12	3	1	3	7	56	12	38	9	82	5.0	2	5.0	1	4.0	9	3.8	14	5.0	2	4.5	3				2		✓		2	3	✓			3	0			
	Sulphur dioxide	7446-09-5	✓	34	✓	✓		8.5	3	1.5	1.3	3.0	5.8	4	8.5	3	6.0	6	3	2	3	8	18	15	17	18	18	5.0	2	4.0	12	4.0	9	4.3	4	5.0	2	4.3	5		✓	✓	3		✓		2	3				3	0			
	Dichloromethane	75-09-2	✓	5	✓	✓		7.8	5	1.5	1.3	2.8	5.6	8	7.8	5	5.5	7	2	2	3	7	56	12	38	12	56	4.8	8	4.1	9	4.8	2	4.1	8	4.8	8	4.4	4		✓	✓	2				2	2				2	2			✓
	Cadmium and compounds	7440-43-9	✓	8	✓	✓	✓	7.6	6	2.3	2.0	1.8	6.1	3	7.6	6	8.2	3	3	3	3	9	1	18	1	27	1	3.8	23	4.4	5	2.8	191	3.8	15	4.4	17	3.7	15		✓	✓	2				2	3				3	3			
	Particulate Matter 10.0 um	N/A	✓	146			✓	7.5	7	1.2	1.3	3.0	5.5	9	7.5	7	4.7	15	3	3	3	9	1	18	1	27	1	4.0	14	4.3	8	4.0	9	4.3	4	4.3	19	4.2	7		✓	✓	1				1	3				3	1			
	Sulphuric acid^^^	7664-93-9	✓	9	✓	✓		7.3	8	2.3	1.3	2.0	5.7	7	7.3	8	6.2	5	3	2	3	8	18	15	17	18	18	5.0	2	3.7	18	3.0	92	3.3	33	5.0	2	3.8	13		✓	✓	3	✓			3	2				2	3			
	Xylenes (individual or mixed isomer	1330-20-7	✓	10	✓	✓		7.0	9	1.3	1.0	3.0	5.3	14	7.0	9	4.0	22	3	1	3	7	56	12	38	9	82	4.0	14	4.7	2	4.0	9	4.0	9	4.7	10	4.2	6		✓		2			✓	1	3				3	0			
	Arsenic and compounds	7440-38-2	✓	13	✓	✓	✓	7.0	9	2.3	1.7	1.8	5.8	6	7.0	9	6.8	4	3	3	3	9	1	18	1	27	1	3.8	23	4.4	5	2.8	191	3.4	30	4.4	17	3.6	17		✓	✓	3		✓		2	3				3	3	✓		
	Lead and compounds	7439-92-1	✓	1		✓	✓	6.9	11	1.7	1.5	2.2	5.3	14	6.9	11	5.4	9	3	3	3	9	1	18	1	27	1	3.2	66	4.5	4	2.2	229	3.7	19	4.5	14	3.4	22		✓	✓	1				1	3				3	1			
	Trichloroethylene	79-01-6	✓	44	✓	✓		6.7	12	1.3	2.0	2.0	5.3	14	6.7	12	5.3	10	2	1	3	6	132	9	109	6	131	3.0	74	3.7	18	3.0	92	4.0	9	4.0	28	3.4	21		✓		1				1	2				2	2			
1,3-	Butadiene (vinyl ethylene)	106-99-0	✓	20	✓	✓		6.7	12	2.7	0.7	2.0	5.3	14	6.7	12	3.6	27	3	1	3	7	56	12	38	9	82	5.0	2	4.3	7	3.0	92	2.7	175	5.0	2	3.8	14				3				3	3			✓					
	Benzene	71-43-2	✓	4	✓	✓		6.7	14	2.3	1.0	2.0	5.3	18	6.7	14	4.7	16	3	1	3	7	56	12	38	9	82	4.0	14	4.7	3	3.0	92	3.0	76	4.7	12	3.7	15		✓		2		✓		2	3	✓			3	3	✓		
	Glutaraldehyde	111-30-8			✓	✓		6.7	14	1.8	1.5	2.0	5.3	18	6.7	14	5.5	7	3	3	3	9	1	18	1	27	1	5.0	2	2.7	49	5.0	1	3.5	23	5.0	2	4.0	8		✓	✓		✓	✓		3			✓		2				
	Tetrachloroethylene	127-18-4	✓	40	✓	✓		6.4	16	1.2	2.5	1.8	5.4	13	6.4	16	5.1	11	2	2	3	7	56	12	38	12	56	2.8	111	3.1	31	3.8	19	4.3	6	4.3	21	3.5	19		✓	✓	1				1	2				2	2			✓
	Total Nitrogen (in solution)	N/A	✓	144			✓	6.4	17	0.8	3.0	1.7	5.5	9	6.4	17	4.2	19	2	3	3	8	18	15	17	18	18	2.7	120	2.3	71	2.7	198	4.7	3	4.7	10	3.1	32			✓	1				1	2				2	0			
	Polycyclic aromatic hydrocarbons	N/A	✓	37			✓	6.4	18	1.3	1.5	2.3	5.1	25	6.4	18	4.5	17	3	2	3	8	18	15	17	18	18	3.3	61	3.9	14	4.3	6	3.8	15	4.3	21	3.8	11		✓	✓	1				1	1				1	3			
2-	Ethoxyethanol	110-80-5		47	✓	✓		6.0	19	3.0	0.0	2.0	5.0	26	6.0	19	0.0	201	3	0	3	6	132	9	109	0	212	3.0	74	3.3	26	2.0	240	2.0	290	3.3	98	2.6	82				1			✓	1	2				2	0			
2-	Ethoxyethanol acetate	111-15-9		47	✓	✓		6.0	19	3.0	0.0	2.0	5.0	26	6.0	19	0.0	201	3	0	3	6	132	9	109	0	212	3.0	74	3.3	26	2.0	240	2.0	290	3.3	98	2.6	82				1			✓	1	2				2	0			
	Methyl ethyl ketone	78-93-3	✓	28	✓	✓		6.0	21	1.2	1.0	2.8	4.9	35	6.0	21	3.2	32	2	2	3	7	56	12	38	12	56	3.8	23	4.1	9	3.8	19	3.8	15	4.1	26	3.8	10		✓	✓	2				2	2				2	0			
	Acetone	67-64-1	✓	24		✓		5.5	22	1.5	0.3	3.0	4.8	42	5.5	22	1.5	92	2	1	3	6	132	9	109	6	131	5.0	2	4.0	12	3.0	92	3.3	33	5.0	2	3.8	9				2				2	2				2	0			
	Ethylene glycol (1,2-ethanediol)	107-21-1	✓	22	✓	✓		5.5	23	1.2	0.8	2.8	4.8	54	5.5	23	2.7	41	2	1	3	6	132	9	109	6	131	3.8	23	4.1	9	3.8	19	3.6	22	4.1	26	3.8	12				2			✓	1	2				2	0			
	Methanol	67-56-1	✓	19	✓	✓		5.3	24	1.5	1.2	2.0	4.7	59	5.3	24	3.5	28	2	2	3	7	56	12	38	12	56	4.0	14	3.0	33	4.0	9	3.2	52	4.0	28	3.5	18		✓	✓	2		✓		2	2				2	0			
	Nickel carbonyl	13463-39-3			✓	✓		5.3	25	2.5	1.5	1.3	5.3	18	5.3	25	5.0	12	3	3	2	8	18	12	38	18	18	4.3	11	3.3	26	2.3	220	2.8	169	4.3	20	3.2	27		✓	✓	3				3	1				1	3			
	Methyl methacrylate	80-62-6	✓	68	✓	✓		5.3	26	1.3	1.7	1.8	4.8	54	5.3	26	3.9	23	3	2	3	8	18	15	17	18	18	2.8	111	3.4	22	3.8	19	3.4	31	3.8	42	3.3	23		✓	✓	1			✓	1	3		✓		2	1			
	Total Phosphorus (in solution)	N/A	✓	147			✓	5.0	27	0.5	2.5	1.7	4.7	59	5.0	27	2.1	66	1	3	3	7	56	12	38	9	82	2.7	120	1.7	119	2.7	198	4.2	7	4.2	25	2.8	54				1				1	0				0				
	Methyl isobutyl ketone	108-10-1	✓	98		✓		5.0	27	0.7	1.8	2.0	4.5	73	5.0	27	2.4	47	1	2	3	6	132	9	109	6	131	3.0	74	2.3	71	4.0	9	3.8	13	4.0	28	3.3	25				1				1	1				1	0			
	Cyanide (inorganic) compounds	N/A	✓	51			✓	5.0	27	1.8	2.2	1.3	5.3	22	5.0	27	5.0	14	3	3	3	9	1	18	1	27	1	4.3	12	1.9	97	4.3	6	3.4	31	4.3	21	3.5	19		✓	✓	3	✓			3	1				1	0			
	Cobalt and compounds	7440-48-4	✓	12	✓	✓	✓	5.0	27	1.0	2.0	1.7	4.7	59	5.0	27	3.3	30	3	2	3	8	18	15	17	18	18	2.7	120	2.7	47	3.7	25	3.7	18	3.7	50	3.2	30		✓	✓	1				1	3		✓		2	1			
	Fluoride compounds	N/A	✓	90			✓	5.0	27	1.5	1.8	1.5	4.8	42	5.0	27	4.1	21	2	3	3	8	18	15	17	18	18	3.5	35	2.5	58	2.5	204	3.3	47	3.5	56	3.0	41		✓	✓	2				2	2				2	0			
	Nickel subsulphide	12035-72-2			✓	✓		4.9	32	2.0	1.7	1.3	5.0	26	4.9	32	4.4	18	3	3	2	8	18	12	38	18	18	3.3	57	3.3	26	2.3	220	3.0	76	3.3	98	3.0	40		✓	✓	2				2	1				1	3			
	Toluene (methylbenzene)	108-88-3	✓	70	✓	✓		4.7	33	1.3	1.3	1.8	4.4	90	4.7	33	3.1	34	3	2	3	8	18	15	17	18	18	2.8	111	3.4	22	3.8	19	3.1	74	3.8	42	3.3	26		✓	✓	1			✓	1	3				3	0			
	Toluene-2,4-diisocyanate	584-84-9	✓	58	✓	✓		4.7	34	1.7	1.0	1.8	4.4	93	4.7	34	2.9	36	3	1	3	7	56	12	38	9	82	3.8	23	3.1	31	2.8	191	2.8	171	3.8	42	3.1	34		✓		3		✓	✓	2	3		✓		2	1			
	Mercury and compounds	7439-97-6	✓	117	✓	✓	✓	4.6	35	1.7	2.0	1.3	4.9	35	4.6	35	4.2	20	3	3	3	9	1	18	1	27	1	3.3	61	2.6	55	2.3	225	3.3	49	3.3	105	2.8	52		✓	✓	1		✓		2	3		✓		2	0			
1,2-	Dibromoethane	106-93-4			✓	✓		4.5	36	1.3	2.5	1.2	5.0	26	4.5	36	3.9	24	2	3	2	7	56	10	95	12	56	3.2	66	1.8	113	3.2	71	3.7	19	3.7	51	3.0	41		✓	✓			✓	✓	2					0			✓	
	Hydrogen sulphide	7783-06-4	✓	84	✓	✓		4.4	37	1.8	1.7	1.3	4.8	54	4.4	37	3.8	25	3	3	3	9	1	18	1	27	1	4.3	12	1.9	97	4.3	6	2.9	160	4.3	21	3.3	24		✓	✓	3	✓			3	2				2	0			
	Phosphoric acid^^^	7664-38-2	✓	26	✓	✓		4.3	38	1.2	1.0	2.0	4.2	126	4.3	38	2.3	50	2	1	3	6	132	9	109	6	131	4.0	14	2.3	71	3.0	92	3.0	76	4.0	28	3.1	32		✓		2		✓		2	1				1	0			
	Hydrochloric acid^^^	7647-01-0	✓	18	✓	✓		4.3	39	1.5	0.7	2.0	4.2	134	4.3	39	2.0	72	3	1	3	7	56	12	38	9	82	4.0	14	3.0	33	3.0	92	2.7	175	4.0	28	3.2	31				3		✓	✓	2	2				2	1			
	Copper and compounds	7440-50-8	✓	3	✓	✓	✓	4.2	40	1.0	1.5	1.7	4.2	126	4.2	40	2.5	44	2	2	3	7	56	12	38	12	56	2.7	120	2.7	47	2.7	198	3.2	52	3.2	117	2.8	54		✓	✓	1				1	2				2	1			
	Chlorine dioxide	10049-04-4	✓	67	✓	✓		4.2	40	1.8	1.5	1.3	4.6	69	4.2	40	3.4	29	2	2	3	7	56	12	38	12	56	3.3	61	2.9	37	3.3	63	2.8	171	3.3	105	3.0	38		✓	✓	2				2	2				2	1			
	Chlorine	7782-50-5	✓	60	✓	✓		4.0	42	1.2	1.5	1.5	4.2	126	4.0	42	2.6	42	3	3	3	9	1	18	1	27	1	3.5	35	1.8	106	4.5	5	3.0	76	4.5	14	3.2	27		✓	✓	3		✓	✓	2	1				1	0			
	Nitric acid^^^	7697-37-2	✓	62	✓	✓		4.0	42	1.8	0.8	1.5	4.2	134	4.0	42	2.3	54	3	1	3	7	56	12	38	9	82	4.5	10	2.2	83	2.5	204	2.3	267	4.5	14	2.9	46				3	✓			3	2				2	0			
4,4-	Methylene bis 2,4 aniline (MOCA)	101-14-4	✓	23	✓	✓		4.0	44	1.3	3.0	0.9	5.3	21	4.0	44	3.7	26	2	3	2	7	56	10	95	12	56	1.9	249	2.6	54	3.9	15	3.9	11	3.9	35	3.1	34			✓	2			✓	1	2				2	2		✓	
	Ammonia (total)	7664-41-7	✓	65	✓	✓		4.0	45	1.0	1.5	1.6	4.1	143	4.0	45	2.4	49	3	3	2.5	8.5	17	15	17	22.5	17	3.6	33	1.6	127	4.6	4	3.1	74	4.6	13	3.2	27		✓	✓	3		✓		2	0				0	0			
	Ethylene oxide	75-21-8	✓	66		✓		3.8	46	2.8	1.0	1.0	4.8	42	3.8	46	2.8	37	3	1	3	7	56	12	38	9	82	4.0	14	3.7	20	2.0	240	2.0	290	4.0	28	2.9	44		✓		3				3	3				3	3			
	Magnesium oxide fume	1309-48-4	✓	89	✓	✓		3.8	47	1.3	0.8	1.8	3.9	170	3.8	47	1.9	74	2	1	3	6	132	9	109	6	131	3.8	23	2.4	68	2.8	191	2.6	188	3.8	42	2.9	46				2				2	2				2	0			
	Zinc and compounds	7440-66-6	✓	7		✓	✓	3.8	48	0.8	2.0	1.3	4.2	134	3.8	48	2.2	59	1	3	3	7	56	12	38	9	82	2.3	150	2.0	90	3.3	61	3.3	47	3.3	98	2.8	57				1				1	1				1	0			
	Acrylic acid	79-10-7	✓	27	✓	✓		3.8	49	1.5	1.0	1.5	4.0	147	3.8	49	2.3	55	3	1	3	7	56	12	38	9	82	3.5	35	2.5	58	2.5	204	2.5	193	3.5	56	2.8	57		✓		3		✓		2	2				2	0			
	Phenol	108-95-2	✓	32	✓	✓		3.8	49	1.7	0.8	1.5	4.0	147	3.8	49	2.1	67	3	1	3	7	56	12	38	9	82	3.5	35	2.8	39	2.5	204	2.3	267	3.5	56	2.8	56				3		✓		2	2				2	1			
	Styrene (ethenylbenzene)	100-42-5	✓	11	✓	✓		3.8	49	1.5	1.0	1.5	4.0	147	3.8	49	2.3	55	3	1	3	7	56	12	38	9	82	2.5	128	3.5	21	2.5	204	2.5	193	3.5	56	2.8	57		✓		1			✓	1	3				3	2			
	Boron and compounds	7440-42-8	✓	92		✓	✓	3.8	49	1.7	0.8	1.5	4.0	147	3.8	49	2.1	67	2	3	3	8	18	15	17	18	18	3.5	35	2.8	39	1.5	329	2.3	265	3.5	56	2.5	91			✓	2				2	2				2	0			
	Biphenyl (1,1-biphenyl)	92-52-4	✓	29	✓	✓		3.7	53	1.0	3.0	0.9	4.9	34	3.7	53	2.8	40	3	3	1.5	7.5	55	9	109	13.5	55	1.9	249	1.9	97	3.9	15	3.9	11	3.9	35	2.9	44				3			✓	1	3				3	0			
	Nickel and compounds (not carbony	7440-02-0	✓	15	✓	✓	✓	3.6	54	1.2	1.0	1.7	3.8	176	3.6	54	1.9	74	2	3	3	8	18	15	17	18	18	2.7	120	3.0	33	1.7	326	2.7	174	3.0	138	2.5	94		✓	✓	1				1	1		✓		2	1			✓
	Formaldehyde (methyl aldehyde)	50-00-0	✓	17	✓	✓		3.6	55	1.5	1.2	1.3	4.0	147	3.6	55	2.3	51	3	2	3	8	18	15	17	18	18	3.3	57	2.3	76	3.3	61	2.5	193	3.3	98	2.9	46		✓	✓	2		✓		2	3		✓		2	3			✓
	Carbon disulphide	75-15-0	✓	43	✓	✓		3.6	56	1.7	1.0	1.3	4.0	147	3.6	56	2.2	59	3	1	3	7	56	12	38	9	82	3.3	57	2.7	49	2.3	220	2.3	267	3.3	98	2.7	72		✓		3		✓	✓	2	3	✓			3	0			

			PAN	PAN	EC	AICS	Gen	NPI		Scores (normalised)								Scores (maximum)								(Harley Wright)												Hlth	1	2	Acute Toxicity					Chronic Toxicity					Carcinogenicity			
prefix	Substance Name	CAS No	List	Rank	List			Risk	Rank	Hlth	Env	Exp	H+En+Ex		(H+En)xEx		(HxEnxEx)		Hlth	Env	Exp	H+En+Ex		(H+En)xEx		(HxEnxEx)		A H		C H		A E		C E						Env	1	2	Dflt	EC				Dflt	EC				Dflt	EC			
																												/exp		/exp		/exp		/exp		Max	Rank	Ave	Rank	Exp	1	2		Vtox	Tox	Harm	Tot		1	2	3	Tot		1	2	3
	Count		141	146	360	296	41	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391		55	82	148	61	143	198	391	147	33	100	0	391	146	9	30	31
							Option	2					Option 1		Option 2		Option 3					Option 4		Option 5		Option 6		Options 7-8								8		7	Option	9	10														
	Acetonitrile	75-05-8	✓	30	✓	✓		3.6	56	1.7	1.0	1.3	4.0	147	3.6	56	2.2	59	3	1	2	6	132	8	131	6	131	3.3	57	2.7	49	2.3	220	2.3	267	3.3	98	2.7	72		✓		3		✓		2	3				3	0			
	Acetaldehyde	75-07-0	✓	35	✓	✓		3.5	58	1.2	1.7	1.3	4.1	143	3.5	58	2.4	48	2	2	3	7	56	12	38	12	56	2.3	152	2.6	55	3.3	63	2.9	163	3.3	105	2.8	62		✓	✓	2			✓	1	2				2	1			✓
	Methylenebis (phenylisocyanate)	101-68-8	✓	120	✓	✓		3.5	58	0.8	2.0	1.3	4.1	143	3.5	58	2.1	67	2	2	3	7	56	12	38	12	56	2.3	152	1.9	97	3.3	63	3.3	49	3.3	105	2.7	69			✓	1			✓	1	1		✓		2	0			
	Chromium (III) compounds	7440-47-3	✓	2	✓	✓	✓	3.5	60	1.2	2.0	1.1	4.3	121	3.5	60	2.6	43	2	3	2	7	56	10	95	12	56	2.1	172	2.4	64	3.1	91	3.1	73	3.1	137	2.7	65		✓	✓	1				1	2				2	0			
1,1,2-	Trichloroethane	79-00-5	✓	33	✓	✓		3.5	61	1.2	1.2	1.5	3.8	176	3.5	61	2.0	71	2	2	3	7	56	12	38	12	56	2.5	128	2.8	39	2.5	204	2.7	175	2.8	245	2.6	74		✓	✓	1			✓	1	2				2	1			
	Ethyl acetate	141-78-6	✓	139		✓		3.3	62	0.7	1.0	2.0	3.7	203	3.3	62	1.3	112	1	1	3	5	233	6	147	3	197	3.0	74	2.3	71	3.0	92	3.0	76	3.0	138	2.8	51				1				1	1				1	0			
	Acrylonitrile (2-propenenitrile)	107-13-1	✓	36	✓	✓		3.3	62	1.7	1.0	1.3	3.9	170	3.3	62	2.1	67	2	1	3	6	132	9	109	6	131	3.3	61	2.6	55	2.3	225	2.3	274	3.3	105	2.6	82		✓		2		✓	✓	2	2				2	1		✓	
	Cyclohexane	110-82-7	✓	97		✓		3.3	64	0.7	1.5	1.5	3.7	203	3.3	64	1.5	92	1	2	3	6	132	9	109	6	131	2.5	128	1.8	106	3.5	28	3.0	76	3.5	56	2.7	64				1				1	1				1	0			
	Vinyl chloride monomer	75-01-4	✓	42	✓	✓		3.2	65	2.2	1.0	1.0	4.2	126	3.2	65	2.2	63	3	1	3	7	56	12	38	9	82	3.0	74	3.3	25	2.0	240	2.0	290	3.3	79	2.6	75		✓		2				2	3				3	3	✓		
	Chloroform (trichloromethane)	67-66-3	✓	45	✓	✓		3.1	66	1.5	1.0	1.3	3.8	196	3.1	66	1.9	78	3	1	3	7	56	12	38	9	82	2.3	152	3.3	30	2.3	225	2.3	274	3.3	105	2.5	94		✓		3			✓	1	3	✓			3	2			✓
2-	Ethylhexyl phthalate (DEHP)	117-81-7	✓	38	✓	✓		3.1	66	1.3	1.2	1.3	3.8	196	3.1	66	1.9	73	2	2	3	7	56	12	38	12	56	2.3	152	2.9	37	3.3	63	2.4	260	3.3	105	2.7	63		✓	✓	1				1	2				2	1			
	Dibutyl phthalate	84-74-2	✓	101	✓	✓		3.1	66	0.8	1.7	1.3	3.8	196	3.1	66	1.7	83	1	2	3	6	132	9	109	6	131	2.3	152	1.9	97	3.3	63	2.9	163	3.3	105	2.6	82				1				1	1				1	0			
	Aniline (benzenamine)	62-53-3	✓	16	✓	✓		3.1	69	2.0	2.2	0.8	4.9	35	3.1	69	3.3	31	3	3	3	9	1	18	1	27	1	2.8	111	2.8	42	3.8	19	2.9	163	3.8	42	3.0	39			✓	3		✓	✓	2	3	✓			3	2			✓
	Cumene (1-methylethylbenzene)	98-82-8	✓	54	✓	✓		3.1	70	1.2	1.0	1.4	3.6	222	3.1	70	1.7	87	2	1	2	5	233	6	147	4	188	2.4	142	2.8	42	2.4	217	2.4	260	2.8	247	2.5	94		✓		2			✓	1	2				2	1			
	Chloroethane (ethyl chloride)	75-00-3	✓	103	✓	✓		3.0	71	2.0	2.0	0.8	4.8	54	3.0	71	3.0	35	3	2	1.5	6.5	125	7.5	143	9	82	3.8	23	1.8	114	1.8	314	2.8	171	3.8	42	2.5	94				3				3	2				2	0			✓
	Organo-tin compounds ++	N/A	✓	74			✓	3.0	71	1.2	1.8	1.0	4.0	147	3.0	71	2.1	65	2	3	3	8	18	15	17	18	18	2.0	177	2.3	76	2.0	240	2.8	169	2.8	245	2.3	139		✓	✓	1				1	2				2	0			
2-	Methoxyethanol	109-86-4		47	✓	✓		2.9	73	1.2	0.0	2.5	3.7	203	2.9	73	0.0	201	1.2	0	3	4.2	329	3.6	208	0	212	3.5	35	3.8	15	2.5	204	2.5	193	3.8	40	3.1	34				1			✓	1	2				2	0			
2-	Methoxyethanol acetate	110-49-6		47	✓	✓		2.9	73	1.2	0.0	2.5	3.7	203	2.9	73	0.0	201	1.2	0	3	4.2	329	3.6	208	0	212	3.5	35	3.8	15	2.5	204	2.5	193	3.8	40	3.1	34				1			✓	1	2				2	0			
	Manganese and compounds	7439-96-5	✓	6	✓	✓	✓	2.9	75	1.3	1.3	1.1	3.8	196	2.9	75	1.9	77	3	2	3	8	18	15	17	18	18	2.1	175	2.8	42	2.1	238	2.4	260	2.8	247	2.3	128		✓	✓	1				1	3				3	0			
	Beryllium and compounds	7440-41-7	✓	14	✓	✓	✓	2.9	75	2.3	1.7	0.7	4.7	58	2.9	75	2.8	38	3	3	2	8	18	12	38	18	18	3.7	31	2.4	70	1.7	324	2.4	264	3.7	49	2.6	90			✓	3	✓	✓	✓	3	3	✓	✓		3	3		✓	
1,2-	Dichloroethane	107-06-2	✓	61	✓	✓		2.8	77	1.2	1.7	1.0	3.8	176	2.8	77	1.9	76	2	2	2	6	132	8	131	8	129	2.0	177	2.3	76	3.0	92	2.7	175	3.0	138	2.5	94		✓	✓	2			✓	1	2				2	1		✓	
	Benzene hexachloro- (HCB) +	608-73-1			✓	✓		2.8	78	1.2	3.0	0.7	4.8	38	2.8	78	2.3	51	2	3	1	6	132	5	169	6	131	2.7	125	1.0	169	3.7	26	3.7	19	3.7	51	2.8	57						✓	✓	2					0				✓
	Chlorophenols (di, tri, tetra) ++	N/A	✓	72			✓	2.8	79	1.7	2.5	0.7	4.8	42	2.8	79	2.8	39	2	3	1	6	132	5	169	6	131	2.7	125	2.0	90	3.7	26	3.2	55	3.7	51	2.9	50				2				2	2				2	1			
	Acrylamide	79-06-1	✓	50	✓	✓		2.8	80	2.0	1.7	0.8	4.4	93	2.8	80	2.5	44	3	2	2	7	56	10	95	12	56	2.8	111	2.8	42	2.8	191	2.4	263	2.8	247	2.7	69			✓	2		✓		2	3	✓			3	1		✓	
	Acetic acid (ethanoic acid)	64-19-7	✓	128	✓	✓		2.7	81	1.7	1.0	1.0	3.7	201	2.7	81	1.7	84	3	1	3	7	56	12	38	9	82	4.0	14	1.3	141	2.0	240	2.0	290	4.0	28	2.3	128		✓		2	✓			3	1				1	0			
	Ethyl butyl ketone	106-35-4	✓	131	✓	✓		2.7	82	0.7	2.0	1.0	3.7	203	2.7	82	1.3	112	1	3	3	7	56	12	38	9	82	2.0	177	1.3	141	3.0	92	3.0	76	3.0	138	2.3	128				1			✓	1	1				1	0			
	Polychlorinated dioxins and furans	N/A	✓	94			✓	2.6	83	2.8	0.7	0.8	4.3	122	2.6	83	1.4	107	3	1	3	7	56	12	38	9	82	3.8	23	3.4	24	1.8	314	1.4	384	3.8	42	2.6	82				3				3	3				3	3			
	Antimony and compounds	7440-36-0	✓	21	✓	✓	✓	2.6	84	1.0	1.3	1.1	3.4	254	2.6	84	1.5	103	1	2	3	6	132	9	109	6	131	2.1	172	2.1	85	2.1	236	2.4	258	2.4	323	2.2	163		✓		1				1	1				1	1			
	Selenium and compounds	7782-49-2	✓	73	✓	✓	✓	2.5	85	1.7	1.8	0.7	4.2	125	2.5	85	2.2	62	2	3	2	7	56	10	95	12	56	2.7	119	2.1	89	1.7	324	2.6	191	2.7	255	2.3	144			✓	1		✓		2	1		✓		2	1			
1,1,2,2-	Tetrachloroethane	79-34-5	✓	80	✓	✓		2.5	86	2.5	2.5	0.5	5.5	9	2.5	86	3.1	33	3	2	1	6	132	5	169	6	131	3.5	35	2.5	58	2.5	204	3.0	76	3.5	56	2.9	46				3	✓			3	3				3	1			
	Ethylbenzene	100-41-4	✓	31	✓	✓		2.5	86	1.0	0.7	1.5	3.2	286	2.5	86	1.0	125	2	1	3	6	132	9	109	6	131	2.5	128	2.5	58	2.5	204	2.2	280	2.5	268	2.4	108				2			✓	1	2				2	0			
	Ethanol	64-17-5	✓	113		✓		2.5	86	1.2	1.3	1.0	3.5	224	2.5	86	1.6	90	2	2	3	7	56	12	38	12	56	2.0	177	2.3	76	3.0	92	2.3	267	3.0	138	2.4	108		✓	✓	1				1	1				1	2			
n-	Hexane	110-54-3	✓	115	✓	✓		2.5	86	1.3	1.7	0.8	3.8	172	2.5	86	1.9	79	3	3	3	9	1	18	1	27	1	1.8	253	2.5	58	3.8	17	2.5	193	3.8	38	2.7	66			✓	1			✓	1	3	✓			3	0			
	Triethylamine	121-44-8	✓	118	✓	✓		2.4	90	1.8	1.8	0.7	4.3	96	2.4	90	2.2	58	3	2	1	6	132	5	169	6	131	3.7	32	1.3	141	2.7	201	2.5	193	3.7	51	2.5	91				2	✓		✓	3	2				2	0			
	Hydrogen cyanide	74-90-8	✓	55	✓	✓		2.4	91	2.0	0.7	0.9	3.6	222	2.4	91	1.2	119	3	1	1.5	5.5	228	6	147	4.5	183	3.9	22	1.9	97	1.9	307	1.6	364	3.9	35	2.3	120				3	✓			3	3				3	0			
	Creosote	8001-58-9	✓	53	✓	✓		2.4	92	1.0	0.7	1.4	3.1	293	2.4	92	0.9	134	3	1	3	7	56	12	38	9	82	2.4	142	2.4	65	2.4	217	2.1	286	2.4	325	2.3	120				1				1	1		✓		1	3		✓	
	Methyl mercaptan	74-93-1	✓	108	✓	✓		2.4	92	1.0	1.8	0.8	3.7	203	2.4	92	1.5	91	3	3	2	8	18	12	38	18	18	1.8	253	1.8	104	1.8	311	2.7	175	2.7	256	2.0	195			✓	3			✓	1	1				1	1			
	Aldrin +	309-00-2			✓	✓		2.3	94	1.7	3.0	0.5	5.2	24	2.3	94	2.5	44	3	3	3	9	1	18	1	27	1	2.5	128	1.8	106	3.5	28	3.5	23	3.5	56	2.8	52			✓			✓		2		✓			3				✓
	Phosgene	75-44-5	✓	133	✓	✓		2.3	94	2.0	2.0	0.6	4.6	71	2.3	94	2.3	51	3	2	2	7	56	10	95	12	56	3.6	33	1.6	127	2.6	203	2.6	188	3.6	55	2.6	82			✓	3	✓	✓		3	3				3	0			
	Methyl tert-butyl ether	1634-04-4	✓	105		✓		2.3	96	1.3	1.2	0.9	3.4	256	2.3	96	1.4	106	2	3	1.5	6.5	125	7.5	143	9	82	2.9	109	1.6	127	1.9	307	2.1	289	2.9	242	2.1	182				2				2	1				1	0			
	Heptachlor #	76-44-8			✓	✓		2.3	97	1.5	3.0	0.5	5.0	26	2.3	97	2.3	55	2	3	3	8	18	15	17	18	18	2.5	128	1.5	132	3.5	28	3.5	23	3.5	56	2.8	57			✓			✓		2			✓		2				✓
	Asbestos ^	1332-21-4	✓	75	✓	✓		2.3	97	2.0	1.0	0.8	3.8	196	2.3	97	1.5	92	3	1	3	7	56	12	38	9	82	2.8	111	2.8	42	1.8	314	1.8	352	2.8	247	2.3	145				0		✓		2	3	✓			3	3	✓		
	Aluminium (fume and dust)	7429-90-5	✓	64		✓	✓	2.2	99	0.8	1.7	0.9	3.4	258	2.2	99	1.2	116	2	3	3	8	18	15	17	18	18	1.9	252	1.6	130	1.9	310	2.6	191	2.6	267	2.0	216			✓	1				1	2				2	0			
	Barium and compounds	7440-39-3	✓	49	✓	✓	✓	2.2	100	0.7	1.3	1.1	3.1	292	2.2	100	1.0	132	1	3	2	6	132	8	131	6	131	2.1	172	1.4	136	2.1	236	2.4	258	2.4	323	2.0	204				1				1	1				1	0			
1,1,1,2-	Tetrachloroethane	630-20-6	✓	91		✓		2.2	101	1.2	1.0	1.0	3.2	286	2.2	101	1.2	120	2	1	3	6	132	9	109	6	131	2.0	177	2.3	76	2.0	240	2.0	290	2.3	328	2.1	190		✓		1				1	2				2	1			
	Epichlorohydrin (chloromethylox)	106-89-8	✓	56	✓	✓		2.1	102	1.8	1.0	0.8	3.6	220	2.1	102	1.4	108	3	1	3	7	56	12	38	9	82	2.8	111	2.4	65	1.8	314	1.8	352	2.8	247	2.2	164				3		✓		2	2		✓		2	2		✓	
	Benzoyl chloride	98-88-4	✓	76	✓	✓		2.1	102	1.5	1.3	0.8	3.6	220	2.1	102	1.5	92	3	2	1.5	6.5	125	7.5	143	9	82	2.8	111	1.8	114	1.8	314	2.1	286	2.8	247	2.1	186				3		✓		2	2				2	1			
	Toluene-2,6-diisocyanate	91-08-7	✓	96	✓	✓		2.1	104	1.7	0.8	0.8	3.3	259	2.1	104	1.2	122	3	1	2	6	132	8	131	6	131	2.8	110	2.2	83	1.8	311	1.7	358	2.8	244	2.1	182				3		✓	✓	2	3		✓		2	1			
n-	Propanol	71-23-8	✓	142		✓		2.1	104	0.7	1.8	0.8	3.3	259	2.1	104	1.0	124	1	3	2	6	132	8	131	6	131	1.8	253	1.2	159	3.8	17	2.7	175	3.8	38	2.4	118				1				1	1				1	0			
	Chlorpyrifos	2921-88-2			✓	✓		2.0	106	1.0	3.0	0.5	4.5	73	2.0	106	1.5	92	2	3	3	8	18	15	17	18	18	2.5	128	0.5	262	3.5	28	3.5	23	3.5	56	2.5	94			✓			✓		2					0				
	Methyl bromide ^	74-83-9			✓	✓		2.0	106	1.0	3.0	0.5	4.5	73	2.0	106	1.5	92	2	3	3	8	18	15	17	18	18	2.5	128	0.5	262	3.5	28	3.5	23	3.5	56	2.5	94			✓			✓	✓	2					0				
	Acetylene (ethyne)	74-86-2	✓	143		✓		2.0	106	0.7	1.3	1.0	3.0	296	2.0	106	0.9	143	1	3	3	7	56	12	38	9	82	2.0	177	1.3	141	2.0	240	2.3	265	2.3	327	1.9	221				1				1	1				1	0			
n-	Pentane	109-66-0	✓	141		✓		2.0	106	0.7	1.3	1.0	3.0	296	2.0	106	0.9	144	1	2	3	6	132	9	109	6	131	2.0	177	1.3	141	3.0	92	2.3	267	3.0	138	2.2	165				1				1	1				1	0			
	Propylene oxide (methyloxirane)	75-56-9	✓	69	✓	✓		2.0	106	1.3	1.3	0.8	3.4	255	2.0	106	1.3	111	3	2	2	7	56	10	95	12	56	1.8	257	2.4	65	1.8	314	2.1	286	2.4	325	2.0	205			✓	3			✓	1	2				2	2		✓	
	Crotonaldehyde (2-butenal)	4170-30-3	✓	130	✓	✓		2.0	106	1.3	2.7	0.5	4.5	73	2.0	106	1.8	81	2	3	1	6	132	5	169	6	131	2.5	128	1.2	163	3.5	28	3.2	52	3.5	56	2.6	82				1		✓	✓	2	2				2	0			
	Vinylidene chloride	75-35-4	✓	59	✓	✓		2.0	106	1.2	1.5	0.8	3.4	256	2.0	106	1.3	114	2	2	1.5	5.5	228	6	147	6	131	1.8	257	2.1	86	2.8	191	2.3	274	2.8	247	2.2	161				1			✓	1	2				2	2			✓

			PAN	PAN	EC	AICS	Gen	NPI		Scores (normalised)								Scores (maximum)								(Harley Wright)												Hlth	1	2	Acute Toxicity					Chronic Toxicity					Carcinogenicity			
prefix	Substance Name	CAS No	List	Rank	List			Risk	Rank	Hlth	Env	Exp	H+En+Ex		(H+En)xEx		(HxEnxEx)		Hlth	Env	Exp	H+En+Ex		(H+En)xEx		(HxEnxEx)		A H		C H		A E		C E						Env	1	2	Dflt	EC				Dflt	EC				Dflt	EC			
																												/exp		/exp		/exp		/exp		Max	Rank	Ave	Rank	Exp	1	2		Vtox	Tox	Harm	Tot		1	2	3	Tot		1	2	3
	Count		141	146	360	296	41	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391		55	82	148	61	143	198	391	147	33	100	0	391	146	9	30	31
							Option	2					Option 1		Option 2		Option 3					Option 4		Option 5		Option 6		Options 7-8								8		7	Option	9	10														
1,4-	Dioxane	123-91-1	✓	83	✓	✓		2.0	113	1.0	0.8	1.1	2.9	327	2.0	113	0.9	140	2	1	2	5	233	6	147	4	188	2.1	175	2.1	86	2.1	238	1.9	339	2.1	336	2.0	195				1			✓	1	2				2	1			✓
o-	Toluidine	95-53-4	✓	41	✓	✓		1.9	114	1.8	2.0	0.5	4.3	96	1.9	114	1.8	80	3	3	1	7	56	6	147	9	82	2.5	128	2.2	81	3.5	28	2.5	193	3.5	56	2.7	66				3		✓	✓	2	3				3	3		✓	
	Acetone cyanohydrin	75-86-5			✓	✓		1.9	114	1.5	2.3	0.5	4.3	96	1.9	114	1.8	82	3	3	1	7	56	6	147	9	82	3.5	35	0.5	262	3.5	28	2.8	168	3.5	56	2.6	75					✓			3					0				
	Tribromomethane (bromoform)	75-25-2	✓	95	✓	✓		1.9	116	1.3	2.5	0.5	4.3	99	1.9	116	1.7	85	2	2	1	5	233	4	193	4	188	2.5	128	1.2	163	2.5	204	3.0	76	3.0	138	2.3	139				2		✓	✓	2	2				2	0			
	Picric acid (2,4,6-trinitrophenol)	88-89-1	✓	52	✓	✓		1.9	117	1.8	1.0	0.7	3.5	224	1.9	117	1.2	117	3	1	1	5	233	4	193	3	197	2.7	125	2.3	71	1.7	327	1.7	358	2.7	256	2.1	190				3		✓		2	3				3	2			
1,2-	Diphenylhydrazine	122-66-7	✓	71	✓	✓		1.8	118	1.2	2.5	0.5	4.2	134	1.8	118	1.5	104	3	3	1	7	56	6	147	9	82	1.5	267	1.8	106	3.5	28	3.0	76	3.5	56	2.5	103				3			✓	1	2				2	1		✓	
	Molybdenum trioxide	1313-27-5	✓	109	✓	✓		1.8	118	1.2	2.5	0.5	4.2	134	1.8	118	1.5	104	3	3	1	7	56	6	147	9	82	1.5	267	1.8	106	3.5	28	3.0	76	3.5	56	2.5	103				1			✓	1	1	✓			3	1			
n-	Butyl alcohol	71-36-3	✓	99	✓	✓	✓	1.8	120	0.7	0.7	1.3	2.7	341	1.8	120	0.6	167	1	1	2	4	331	4	193	2	208	2.3	150	1.7	124	2.3	220	2.0	290	2.3	328	2.1	190				1			✓	1	1				1	0			
	Fenitrothion	122-14-5			✓	✓		1.8	121	0.5	3.0	0.5	4.0	147	1.8	121	0.8	147	1	3	3	7	56	12	38	9	82	1.5	267	0.5	262	3.5	28	3.5	23	3.5	56	2.3	145							✓	1					0				
S-	Bioallethrin	28434-00-6			✓	✓		1.8	121	0.5	3.0	0.5	4.0	147	1.8	121	0.8	147	1	3	3	7	56	12	38	9	82	1.5	267	0.5	262	3.5	28	3.5	23	3.5	56	2.3	145							✓	1					0				
	Maleic anhydride	108-31-6	✓	104	✓	✓		1.8	123	0.8	1.5	0.8	3.1	293	1.8	123	0.9	136	3	2	1.5	6.5	125	7.5	143	9	82	1.8	257	1.4	139	2.8	191	2.3	274	2.8	247	2.0	195				2			✓	1	3		✓		2	0			
	Ethyl acrylate (2-propenoic acid)	140-88-5	✓	102	✓	✓		1.8	123	0.8	1.5	0.8	3.1	293	1.8	123	0.9	136	2	3	3	8	18	15	17	18	18	1.8	257	1.4	139	1.8	314	2.3	274	2.3	330	1.8	245			✓	2			✓	1	2		✓		2	0			
	Dieldrin +	60-57-1			✓	✓		1.7	125	2.2	3.0	0.3	5.5	12	1.7	125	2.2	64	3	3	2	8	18	12	38	18	18	3.3	47	1.7	124	3.3	43	3.3	33	3.3	79	2.9	43			✓		✓	✓		3		✓			3				✓
	Thiourea	62-56-6	✓	134	✓	✓		1.7	126	1.5	2.5	0.4	4.4	90	1.7	126	1.6	88	3	2	1	6	132	5	169	6	131	1.4	280	2.4	68	2.4	219	2.9	163	2.9	242	2.3	139				2			✓	1	3		✓		3	2			✓
2,4-	Dinitrotoluene	121-14-2	✓	122	✓	✓		1.7	126	1.5	2.5	0.4	4.4	90	1.7	126	1.6	88	3	3	1	7	56	6	147	9	82	2.4	144	1.4	137	3.4	42	2.9	163	3.4	77	2.5	91				3		✓		2	3		✓		2	1			
2-	Butoxyethanol	111-76-2		47	✓	✓		1.7	128	0.8	0.0	2.0	2.8	334	1.7	128	0.0	201	3	0	3	6	132	9	109	0	212	3.0	74	2.7	49	2.0	240	2.0	290	3.0	138	2.4	108				1				1	2				2	0			
	Diacetone alcohol	123-42-2	✓	136	✓	✓		1.7	128	0.8	0.8	1.0	2.7	341	1.7	128	0.7	159	2	1	3	6	132	9	109	6	131	2.0	177	1.7	124	2.0	240	1.8	343	2.0	338	1.9	238				1			✓	1	2				2	0			
	Methamidophos	10265-92-6			✓	✓		1.7	128	1.5	1.8	0.5	3.8	176	1.7	128	1.4	108	3	3	3	9	1	18	1	27	1	3.5	35	0.5	262	3.5	28	2.3	267	3.5	56	2.5	103			✓		✓	✓	✓	3					0				
	Hexachlorobutadiene	87-68-3	✓	78	✓	✓		1.7	128	1.2	2.2	0.5	3.8	176	1.7	128	1.3	115	2	3	1	6	132	5	169	6	131	1.5	267	1.8	106	3.5	28	2.7	175	3.5	56	2.4	118				1				1	2				2	1			
	Phthalic anhydride	85-44-9	✓	86	✓	✓		1.6	132	1.0	1.2	0.8	2.9	327	1.6	132	0.9	145	2	2	3	7	56	12	38	12	56	1.8	257	1.8	114	1.8	314	1.9	339	1.9	376	1.8	245			✓	1			✓	1	2				2	0			
	Diethylamine	109-89-7	✓	124	✓	✓		1.6	133	1.8	1.3	0.5	3.7	201	1.6	133	1.2	117	3	2	3	8	18	15	17	18	18	3.5	35	1.2	163	1.5	329	1.8	341	3.5	56	2.0	205			✓	1	✓		✓	3	1				1	1			
	Chloromethane (methyl chloride)	74-87-3	✓	57	✓	✓		1.6	134	2.0	1.2	0.5	3.7	203	1.6	134	1.2	120	3	2	3	8	18	15	17	18	18	2.5	128	2.5	58	1.5	329	1.7	358	2.5	268	2.0	195			✓	3		✓	✓	2	3				3	1			✓
	Phosphamidon	13171-21-6			✓			1.6	135	1.7	3.0	0.3	5.0	26	1.6	135	1.7	85	3	3	2	8	18	12	38	18	18	3.3	47	0.7	194	3.3	43	3.3	33	3.3	79	2.7	66			✓		✓	✓		3					0				✓
2,6-	Dinitrotoluene	606-20-2	✓	123		✓		1.5	136	2.2	1.5	0.4	4.1	143	1.5	136	1.4	110	3	3	1	7	56	6	147	9	82	3.4	46	1.8	114	1.4	337	1.9	338	3.4	77	2.1	182				3				3	3				3	1			
	Pyridine	110-86-1	✓	87	✓	✓		1.5	136	1.0	0.7	0.9	2.6	346	1.5	136	0.6	166	3	1	1.5	5.5	228	6	147	4.5	183	1.9	249	1.9	97	1.9	307	1.6	364	1.9	376	1.8	239				2			✓	1	3				3	0			
	Cyclohexanone	108-94-1	✓	135	✓	✓		1.5	138	0.7	0.8	1.0	2.5	348	1.5	138	0.6	171	2	1	3	6	132	9	109	6	131	2.0	177	1.3	141	2.0	240	1.8	343	2.0	338	1.8	245				2			✓	1	1				1	0			
	Coumaphos	56-72-4			✓	✓		1.5	138	1.5	3.0	0.3	4.8	42	1.5	138	1.5	92	3	3	2	8	18	12	38	18	18	3.3	47	0.3	269	3.3	43	3.3	33	3.3	79	2.6	75			✓		✓		✓	3					0				
	Monocrotophos	6923-22-4			✓	✓		1.5	138	1.5	3.0	0.3	4.8	42	1.5	138	1.5	92	3	3	2	8	18	12	38	18	18	3.3	47	0.3	269	3.3	43	3.3	33	3.3	79	2.6	75			✓		✓	✓		3					0				
	Fensulfothlan	115-90-2			✓	✓		1.5	138	1.5	3.0	0.3	4.8	42	1.5	138	1.5	92	3	3	2	8	18	12	38	18	18	3.3	47	0.3	269	3.3	43	3.3	33	3.3	79	2.6	75			✓		✓			3					0				
	Disulfoton	298-04-4			✓	✓		1.5	138	1.5	3.0	0.3	4.8	42	1.5	138	1.5	92	3	3	2	8	18	12	38	18	18	3.3	47	0.3	269	3.3	43	3.3	33	3.3	79	2.6	75			✓		✓			3					0				
	Methidathion	950-37-8			✓	✓		1.5	138	1.5	3.0	0.3	4.8	42	1.5	138	1.5	92	3	3	2	8	18	12	38	18	18	3.3	47	0.3	269	3.3	43	3.3	33	3.3	79	2.6	75			✓		✓		✓	3					0				
1,2-	Dichloro-(E)-ethene	156-60-5	✓	106	✓	✓		1.5	138	1.0	2.0	0.5	3.5	224	1.5	138	1.0	125	2	2	1	5	233	4	193	4	188	1.5	267	1.5	132	1.5	329	2.5	193	2.5	268	1.8	260				1			✓	1	2				2	1			
	Hexachloroethane	67-72-1	✓	46	✓	✓		1.5	145	1.2	0.8	0.8	2.8	339	1.5	145	0.7	157	2	1	1.5	4.5	328	4.5	192	3	197	1.8	257	2.1	86	1.8	314	1.6	364	2.1	336	1.8	245				1				1	2				2	1			
1,2,4-	Trimethylbenzene	25551-13-7	✓	63	✓	✓		1.4	146	0.8	1.3	0.7	2.8	334	1.4	146	0.7	156	2	2	2	6	132	8	131	8	129	1.7	264	1.3	141	2.7	201	2.0	290	2.7	256	1.9	221			✓	1			✓	1	2				2	0			
	Methyl amine (methanamine)	74-89-5	✓	100	✓	✓		1.4	147	1.2	1.7	0.5	3.3	265	1.4	147	1.0	133	2	2	1	5	233	4	193	4	188	1.5	267	1.8	106	2.5	204	2.2	280	2.5	268	2.0	205				2			✓	1	2				2	1			
	Cyclohexanol	108-93-0	✓	138	✓	✓		1.4	148	0.7	1.0	0.8	2.5	348	1.4	148	0.6	170	1	1	2	4	331	4	193	2	208	1.8	253	1.2	159	1.8	311	1.8	341	1.8	378	1.7	278				1			✓	1	1				1	0			
	Methyl acrylate	96-33-3	✓	85	✓	✓		1.4	149	1.0	0.8	0.8	2.6	346	1.4	149	0.6	165	3	1	3	7	56	12	38	9	82	1.8	257	1.8	114	1.8	314	1.6	364	1.8	381	1.7	276				2			✓	1	3				3	0			
	Pirimiphos-ethyl	23505-41-1			✓	✓		1.3	150	1.0	3.0	0.3	4.3	99	1.3	150	1.0	125	2	3	2	7	56	10	95	12	56	2.3	145	0.3	269	3.3	43	3.3	33	3.3	79	2.3	120			✓			✓	✓	2					0				
	Oxydemeton-methyl	301-12-2			✓			1.3	150	1.0	3.0	0.3	4.3	99	1.3	150	1.0	125	2	3	2	7	56	10	95	12	56	2.3	145	0.3	269	3.3	43	3.3	33	3.3	79	2.3	120			✓			✓		2					0				
	Leptophos	21609-90-5			✓	✓		1.3	150	1.0	3.0	0.3	4.3	99	1.3	150	1.0	125	2	3	2	7	56	10	95	12	56	2.3	145	0.3	269	3.3	43	3.3	33	3.3	79	2.3	120			✓		✓	✓	✓	2					0				
	Ethanolamine	141-43-5	✓	114	✓	✓		1.3	150	0.7	0.7	1.0	2.3	378	1.3	150	0.4	183	2	1	3	6	132	9	109	6	131	2.0	177	1.3	141	2.0	240	1.7	358	2.0	338	1.8	260				2			✓	1	1				1	0			
	Dimethylamine (methanamine)	124-40-3	✓	137	✓	✓		1.3	150	0.7	2.0	0.5	3.2	286	1.3	150	0.7	160	1	2	3	6	132	9	109	6	131	1.5	267	0.8	183	2.5	204	2.5	193	2.5	268	1.8	239				1			✓	1	1				1	0			
	Hydroxylamine sulphate (1:1)	10046-00-1			✓	✓		1.3	155	1.0	2.8	0.3	4.2	134	1.3	155	0.9	135	3	3	2	8	18	12	38	18	18	1.3	282	1.3	141	3.3	43	3.2	55	3.3	79	2.3	139			✓				✓	1		✓	✓		3				
	Isophorone	78-59-1	✓	132	✓	✓		1.3	156	0.8	1.7	0.5	3.0	296	1.3	156	0.7	158	1	3	1	5	233	4	193	3	197	1.5	267	1.2	163	1.5	329	2.2	279	2.2	331	1.6	298				1			✓	1	1				1	1			
	Methyl propyl ketone (MPK)	107-87-9	✓	140	✓	✓		1.2	157	0.7	1.2	0.7	2.5	373	1.2	157	0.5	173	1	2	1	4	331	3	210	2	208	1.7	264	1.0	169	1.7	327	1.8	350	1.8	379	1.5	302				1				1	1				1	0			
	Diazinon	333-41-5			✓	✓		1.2	158	0.5	3.0	0.3	3.8	172	1.2	158	0.5	174	1	3	2	6	132	8	131	6	131	1.3	282	0.3	269	3.3	43	3.3	33	3.3	79	2.1	186							✓	1					0				
	Dichlofenthion	97-17-6			✓	✓		1.2	158	0.5	3.0	0.3	3.8	172	1.2	158	0.5	174	1	3	2	6	132	8	131	6	131	1.3	282	0.3	269	3.3	43	3.3	33	3.3	79	2.1	186							✓	1					0				
	Demeton	8065-48-3			✓			1.1	160	1.5	1.8	0.3	3.7	203	1.1	160	0.9	138	3	3	2	8	18	12	38	18	18	3.3	47	0.3	269	3.3	43	2.2	280	3.3	79	2.3	139			✓		✓			3					0				
3,3-	Dichlorobenzidine	91-94-1	✓	119	✓	✓		1.1	161	1.3	3.0	0.3	4.6	69	1.1	161	1.0	125	2	3	0.5	5.5	228	2.5	216	3	197	1.3	285	1.9	93	3.3	63	3.3	49	3.3	105	2.4	106				1				1	2		✓		2	1		✓	
	Bromochloromethane	74-97-5	✓	112	✓	✓		1.1	162	1.0	1.2	0.5	2.7	341	1.1	162	0.6	168	2	2	1	5	233	4	193	4	188	1.5	267	1.5	132	1.5	329	1.7	358	1.7	383	1.5	302				1				1	2				2	1			
bis-(2-	Chloro-1-methylethyl) ether	108-60-1	✓	127				1.0	163	1.8	2.3	0.3	4.4	93	1.0	163	1.1	123	3	3	0.5	6.5	125	3	210	4.5	183	2.3	152	1.9	93	2.3	225	2.6	188	2.6	266	2.3	145				2				2	1				1	3			
	Demeton-O	298-03-3			✓			1.0	164	1.5	1.5	0.3	3.3	259	1.0	164	0.8	147	3	3	2	8	18	12	38	18	18	3.3	47	0.3	269	3.3	43	1.8	343	3.3	79	2.2	158			✓		✓			3					0				
	Hydroxylamine hydrochloride	5470-11-1			✓	✓		1.0	164	1.5	1.5	0.3	3.3	259	1.0	164	0.8	147	3	3	2	8	18	12	38	18	18	2.3	145	1.3	141	3.3	43	1.8	343	3.3	79	2.2	158			✓		✓	✓	✓	2		✓	✓		3				
	Tetraethyl pyrophosphate (TEPP)	107-49-3			✓			1.0	164	1.5	1.5	0.3	3.3	259	1.0	164	0.8	147	3	3	2	8	18	12	38	18	18	3.3	47	0.3	269	3.3	43	1.8	343	3.3	79	2.2	158			✓		✓			3					0				
	Titanium tetrachloride	7550-45-0	✓	110	✓	✓		1.0	164	1.3	0.7	0.5	2.5	348	1.0	164	0.4	183	2	1	1	4	331	3	210	2	208	2.5	128	1.2	163	1.5	329	1.2	385	2.5	268	1.6	300				2		✓	✓	2	2				2	0			
	Benzidine	29398-96-7	✓	121		✓		1.0	164	1.3	2.7	0.3	4.3	122	1.0	164	0.9	141	3	3	0.5	6.5	125	3	210	4.5	183	1.3	285	1.9	93	3.3	63	2.9	160	3.3	105	2.3	120				1				1	2				2	3			

			PAN	PAN	EC	AICS	Gen	NPI		Scores (normalised)								Scores (maximum)								(Harley Wright)												Hlth	1	2	Acute Toxicity					Chronic Toxicity					Carcinogenicity			
prefix	Substance Name	CAS No	List	Rank	List			Risk	Rank	Hlth	Env	Exp	H+En+Ex		(H+En)xEx		(HxEnxEx)									A H		C H		A E		C E						Env	1	2	Dflt	EC				Dflt	EC				Dflt	EC			
																										/exp		/exp		/exp		/exp		Max	Rank	Ave	Rank	Exp	1	2		Vtox	Tox	Harm	Tot		1	2	3	Tot		1	2	3
	Count		141	146	360	296	41	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391		55	82	148	61	143	198	391	147	33	100	0	391	146	9	30	31
							Option	2					Option 1		Option 2		Option 3					Option 4		Option 5		Option 6	Options 7-8								8		7	Option	9	10														
	Chloromethyl methyl ether	107-30-2	✓	126	✓	✓		1.0	164	1.3	2.7	0.3	4.3	122	1.0	164	0.9	141	3	3	0.5	6.5	125	3	210	4.5	183	1.3	285	1.9	93	3.3	63	2.9	160	3.3	105	2.3	120				2			✓	1	1				1	3	✓		
	Vinyl toluene	25013-15-4	✓	125		✓		1.0	170	0.8	1.2	0.5	2.5	348	1.0	170	0.5	180	2	2	1	5	233	4	193	4	188	1.5	267	1.2	163	1.5	329	1.7	358	1.7	383	1.5	322				1				1	2				2	0			
	Aluminium oxide (fibrous form)	1344-28-1	✓	88		✓		1.0	171	1.0	1.3	0.4	2.8	339	1.0	171	0.6	169	2	2	1	5	233	4	193	4	188	1.4	280	1.4	137	1.4	337	1.8	351	1.8	380	1.5	312				1				1	2				2	1			
	Chlorobenzenes (di, tri, tetra) ++	N/A	✓	81			✓	0.9	172	1.3	0.5	0.5	2.3	374	0.9	172	0.3	189	2	3	1	6	132	5	169	6	131	1.5	267	2.2	81	0.5	382	1.0	386	2.2	331	1.3	352				1				1	2				2	1			
	Omethoate	1113-02-6			✓	✓		0.8	173	1.0	1.5	0.3	2.8	329	0.8	173	0.5	174	2	3	2	7	56	10	95	12	56	2.3	145	0.3	269	3.3	43	1.8	343	3.3	79	2.0	217			✓			✓	✓	2				0				
	Arsine	7784-42-1			✓	✓		0.8	173	2.0	3.0	0.2	5.2	23	0.8	173	1.0	125	3	3	1	7	56	6	147	9	82	3.2	66	1.2	159	3.2	71	3.2	55	3.2	118	2.7	69					✓		✓	3		✓		3					
	Triphenyltin acetate	900-95-8			✓	✓		0.8	175	1.8	3.0	0.2	5.0	26	0.8	175	0.9	138	3	3	1	7	56	6	147	9	82	3.2	66	0.8	183	3.2	71	3.2	55	3.2	118	2.6	82					✓	✓	✓	3			✓	2					
	EPN	2104-64-5			✓			0.8	176	1.5	3.0	0.2	4.7	59	0.8	176	0.8	147	3	3	1	7	56	6	147	9	82	3.2	66	0.2	289	3.2	71	3.2	55	3.2	118	2.4	108					✓			3				0					
	Dicrotophos	141-66-2			✓	✓		0.8	176	1.5	3.0	0.2	4.7	59	0.8	176	0.8	147	3	3	1	7	56	6	147	9	82	3.2	66	0.2	289	3.2	71	3.2	55	3.2	118	2.4	108					✓	✓		3				0					
	Parathion	56-38-2			✓	✓		0.8	176	1.5	3.0	0.2	4.7	59	0.8	176	0.8	147	3	3	1	7	56	6	147	9	82	3.2	66	0.2	289	3.2	71	3.2	55	3.2	118	2.4	108					✓			3				0					
	Chlorfenvinphos	470-90-6			✓	✓		0.8	176	1.5	3.0	0.2	4.7	59	0.8	176	0.8	147	3	3	1	7	56	6	147	9	82	3.2	66	0.2	289	3.2	71	3.2	55	3.2	118	2.4	108					✓	✓		3				0					
	Nitrobenzene	98-95-3	✓	39	✓	✓		0.7	180	1.8	2.5	0.2	4.5	72	0.7	180	0.8	146	3	2	1	6	132	5	169	6	131	2.2	158	1.8	104	2.2	229	2.7	175	2.7	256	2.2	161				3		✓		2	3	✓		3	0			✓
	Dinoseb	88-85-7			✓	✓		0.7	181	1.3	3.0	0.2	4.5	73	0.7	181	0.7	160	2	3	1	6	132	5	169	6	131	2.2	158	0.8	183	3.2	71	3.2	55	3.2	118	2.3	128					✓	✓	2					0					
	Amines, polyethylenepoly-	68131-73-7			✓	✓	✓	0.7	181	1.3	3.0	0.2	4.5	73	0.7	181	0.7	160	2	3	1	6	132	5	169	6	131	2.2	158	0.8	183	3.2	71	3.2	55	3.2	118	2.3	128					✓	✓	2			✓		2					
m-	Phenylenediamine	108-45-2			✓	✓		0.7	181	1.3	3.0	0.2	4.5	73	0.7	181	0.7	160	2	3	1	6	132	5	169	6	131	2.2	158	0.8	183	3.2	71	3.2	55	3.2	118	2.3	128					✓		2			✓		2					
p-	Diaminobenzene	106-50-3			✓	✓		0.7	181	1.3	3.0	0.2	4.5	73	0.7	181	0.7	160	2	3	1	6	132	5	169	6	131	2.2	158	0.8	183	3.2	71	3.2	55	3.2	118	2.3	128					✓		2			✓		2					
	Butyl mercaptan	54812-86-1	✓	129		✓		0.7	185	1.2	0.2	0.5	1.8	385	0.7	185	0.1	198	2	1	2	5	233	6	147	4	188	2.5	128	0.8	183	0.5	382	0.7	389	2.5	268	1.1	362				2				2	1				1	0			
	Phosalone	2310-17-0			✓	✓		0.7	186	1.0	3.0	0.2	4.2	126	0.7	186	0.5	174	2	3	1	6	132	5	169	6	131	2.2	158	0.2	289	3.2	71	3.2	55	3.2	118	2.2	165					✓	✓	2					0					
	Carbophenothion	786-19-6			✓	✓		0.7	186	1.0	3.0	0.2	4.2	126	0.7	186	0.5	174	2	3	1	6	132	5	169	6	131	2.2	158	0.2	289	3.2	71	3.2	55	3.2	118	2.2	165					✓		2					0					
	Bromophos-ethyl	4824-78-6			✓	✓		0.7	186	1.0	3.0	0.2	4.2	126	0.7	186	0.5	174	2	3	1	6	132	5	169	6	131	2.2	158	0.2	289	3.2	71	3.2	55	3.2	118	2.2	165					✓	✓	2					0					
	Silver and compounds	7440-22-4	✓	93	✓	✓	✓	0.6	189	1.0	0.2	0.6	1.7	389	0.6	189	0.1	199	3	1	2	6	132	8	131	6	131	1.6	266	1.6	130	0.6	381	0.7	388	1.6	385	1.1	366				1				1	3				3	0			
	Tetraethylenepentamine	112-57-2			✓	✓		0.6	190	1.3	2.5	0.2	4.0	168	0.6	190	0.6	171	2	3	1	6	132	5	169	6	131	2.2	158	0.8	183	2.2	229	2.7	175	2.7	256	2.0	219							✓	✓	2			✓		2					
	Phenylhydrazine	100-63-0			✓	✓		0.6	190	1.0	2.8	0.2	4.0	168	0.6	190	0.5	182	2	3	1	6	132	5	169	6	131	2.2	158	0.2	289	3.2	71	3.0	159	3.2	118	2.1	182							✓	✓	2					0					
	Amitrole	61-82-5			✓	✓		0.6	192	1.2	2.5	0.2	3.8	176	0.6	192	0.5	180	3	3	1	7	56	6	147	9	82	1.2	288	1.5	132	2.2	229	2.7	175	2.7	256	1.9	232								✓	1		✓			3					✓
	Thallium and compounds	7440-28-0	✓	111	✓	✓	✓	0.6	193	2.0	0.3	0.3	2.6	345	0.6	193	0.2	194	3	2	0.5	5.5	228	2.5	216	3	197	3.3	61	1.3	158	0.3	385	0.6	390	3.3	105	1.3	351				3	✓			3	3		✓	2	0			
	Crufomate	299-86-5			✓			0.6	194	0.5	3.0	0.2	3.7	203	0.6	194	0.3	190	1	3	1	5	233	4	193	3	197	1.2	288	0.2	289	3.2	71	3.2	55	3.2	118	1.9	221								✓	1					0					
2,4-	Dichlorophenol	120-83-2			✓	✓		0.6	194	1.0	2.5	0.2	3.7	203	0.6	194	0.4	187	2	3	1	6	132	5	169	6	131	2.2	158	0.2	289	2.2	229	2.7	175	2.7	256	1.8	245							✓	✓	2					0					
	Demeton-S-methyl	919-86-8			✓	✓		0.6	194	1.0	2.5	0.2	3.7	203	0.6	194	0.4	187	2	3	1	6	132	5	169	6	131	2.2	158	0.2	289	2.2	229	2.7	175	2.7	256	1.8	245							✓		2					0					
2,4,5-	Trichlorophenol	95-95-4			✓	✓		0.6	194	0.5	3.0	0.2	3.7	203	0.6	194	0.3	190	1	3	1	5	233	4	193	3	197	1.2	288	0.2	289	3.2	71	3.2	55	3.2	118	1.9	221								✓	1					0					
	Diethylene diamine	110-85-0			✓	✓		0.6	198	1.3	2.0	0.2	3.5	252	0.6	198	0.4	183	2	3	1	6	132	5	169	6	131	2.2	158	0.8	183	1.2	339	2.2	280	2.2	333	1.6	295							✓		2			✓		2					
	Triethylenetetramine	112-24-3			✓	✓		0.6	198	1.3	2.0	0.2	3.5	252	0.6	198	0.4	183	2	3	1	6	132	5	169	6	131	2.2	158	0.8	183	1.2	339	2.2	280	2.2	333	1.6	295							✓	✓	2			✓		2					
	Cycloexyldimethoxymethylsilane	17865-32-6			✓	✓		0.5	200	0.5	2.5	0.2	3.2	286	0.5	200	0.2	193	1	3	1	5	233	4	193	3	197	1.2	288	0.2	289	2.2	229	2.7	175	2.7	256	1.5	302								✓	1					0					
m-	Diaminobenzene	108-42-2			✓			0.5	200	0.0	3.0	0.2	3.2	286	0.5	200	0.0	201	0	3	1	4	331	3	210	0	212	0.2	367	0.2	289	3.2	71	3.2	55	3.2	118	1.7	280									0					0					
Bis(	Hydroxylammonium) sulphate	10039-54-0			✓	✓		0.4	202	1.0	1.5	0.2	2.7	341	0.4	202	0.3	190	3	3	1	7	56	6	147	9	82	1.2	288	1.2	159	3.2	71	1.7	354	3.2	118	1.8	244								✓	1		✓	✓		3					
1,1,1-	Trichloroethane	71-55-6			✓	✓		0.4	202	0.5	0.3	0.5	1.3	390	0.4	202	0.1	200	1	2	3	6	132	9	109	6	131	1.5	267	0.5	262	0.5	382	0.8	387	1.5	386	0.8	384									1					0					
rt-pentyl-2-	Benzothiazolesulfenamide	110799-28-6			✓			0.4	204	0.3	2.0	0.2	2.5	348	0.4	204	0.1	197	2	3	1	6	132	5	169	6	131	0.2	367	0.8	183	1.2	339	2.2	280	2.2	333	1.1	367									0			✓		2					
	Resorcinol	108-46-3			✓	✓		0.3	205	0.5	1.5	0.2	2.2	380	0.3	205	0.1	195	1	3	1	5	233	4	193	3	197	1.2	288	0.2	289	3.2	71	1.7	354	3.2	118	1.5	301									1					0					
(3,5-di-tert-	Butylsalicilato-O1,O2)zinc	42405-40-3			✓	✓		0.3	205	0.5	1.5	0.2	2.2	380	0.3	205	0.1	195	1	3	1	5	233	4	193	3	197	1.2	288	0.2	289	0.2	386	1.7	354	1.7	382	0.8	385									1					0					
	Dimethylnitrosamine	62-75-9			✓	✓		0.0	207	2.3	2.5	0.0	4.8	38	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	1.7	119	2.0	240	2.5	193	3.0	138	2.3	137					✓	✓		3		✓		3			✓		
	Ethyleneimine	151-56-4			✓	✓		0.0	207	1.8	2.5	0.0	4.3	99	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.7	194	2.0	240	2.5	193	3.0	138	2.0	195					✓	✓		3				0			✓		
	Hexanitrodiphenylamine	131-73-7			✓	✓		0.0	207	1.8	2.5	0.0	4.3	99	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.7	194	2.0	240	2.5	193	3.0	138	2.0	195					✓			3			✓	2					
	Dinitrobenzene (mixed isomers)	25154-54-5			✓		✓	0.0	207	1.8	3.0	0.0	4.8	42	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.7	194	3.0	92	3.0	76	3.0	138	2.4	108					✓			3			✓	2					
4-	Methoxy-2-nitroaniline	96-96-8			✓	✓		0.0	207	1.8	2.0	0.0	3.8	176	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.7	194	1.0	342	2.0	290	3.0	138	1.7	280					✓			3			✓	2					
2-	Butylamine	13952-84-6			✓	✓		0.0	207	1.5	1.7	0.0	3.2	285	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.0	305	3.0	92	1.7	354	3.0	138	1.9	220					✓			3				0					
	Hexanitrodiphenylamine	2844-92-0			✓			0.0	207	1.5	2.5	0.0	4.0	147	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.0	305	2.0	240	2.5	193	3.0	138	1.9	232					✓	✓		3				0					
	Phosacetim	4104-14-7			✓			0.0	207	1.5	3.0	0.0	4.5	73	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.0	305	3.0	92	3.0	76	3.0	138	2.3	145					✓			3				0					
	Fanofos	944-22-9			✓			0.0	207	1.5	3.0	0.0	4.5	73	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.0	305	3.0	92	3.0	76	3.0	138	2.3	145					✓			3				0					
	Dialifos	10311-84-9			✓			0.0	207	1.5	3.0	0.0	4.5	73	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.0	305	3.0	92	3.0	76	3.0	138	2.3	145					✓	✓		3				0					
	Endrin +	72-20-8			✓	✓		0.0	207	1.5	3.0	0.0	4.5	73	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.0	305	3.0	92	3.0	76	3.0	138	2.3	145					✓	✓		3				0					
	Hexachlorocyclopentadiene	77-47-4			✓	✓		0.0	207	1.5	3.0	0.0	4.5	73	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.0	305	3.0	92	3.0	76	3.0	138	2.3	145					✓	✓	✓	3				0					
	Hexachlorobenzene +	118-74-1			✓	✓		0.0	207	1.8	3.0	0.0	4.8	38	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	2.0	177	1.7	119	3.0	92	3.0	76	3.0	138	2.4	106						✓		2		✓		3				✓	
	Dichlorodiphenyltrichloroethane (DD	50-29-3			✓	✓		0.0	207	1.7	3.0	0.0	4.7	67	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	2.0	177	1.3	141	3.0	92	3.0	76	3.0	138	2.3	128						✓		2		✓		3					✓
o-	Ethylhydroxylamine	624-86-2			✓	✓		0.0	207	1.5	1.5	0.0	3.0	296	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	2.0	177	1.0	169	3.0	92	1.5	368	3.0	138	1.9	232						✓	✓	2		✓	✓	3					
1,3-	Dichloropropene	542-75-6			✓	✓		0.0	207	1.3	3.0	0.0	4.3	99	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	3.0	92	3.0	76	3.0	138	2.2	165						✓	✓	2			✓	2					
2-	Methyl-4-phenylpentanol	92585-24-5			✓	✓		0.0	207	1.3	2.5	0.0	3.8	176	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	2.0	240	2.5	193	2.5	268	1.8	245						✓		2			✓	2					
	Heptachlor epoxide +	1024-57-3			✓	✓		0.0	207	1.5	3.0	0.0	4.5	73	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	1.0	169	3.0	92	3.0	76	3.0	138	2.3	145						✓		2			✓	2					✓

			PAN	PAN	EC	AICS	Gen	NPI		Scores (normalised)								Scores (maximum)								(Harley Wright)												Hlth	1	2	Acute Toxicity					Chronic Toxicity					Carcinogenicity			
prefix	Substance Name	CAS No	List	Rank	List			Risk	Rank	Hlth	Env	Exp	H+En+Ex		(H+En)xEx		(HxEnxEx)		Hlth	Env	Exp	H+En+Ex		(H+En)xEx		(HxEnxEx)		A H		C H		A E		C E						Env	1	2	Dflt	EC				Dflt	EC				Dflt	EC			
																												/exp		/exp		/exp		/exp		Max	Rank	Ave	Rank	Exp	1	2		Vtox	Tox	Harm	Tot		1	2	3	Tot		1	2	3
	Count		141	146	360	296	41	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391		55	82	148	61	143	198	391	147	33	100	0	391	146	9	30	31
							Option	2					Option 1		Option 2		Option 3					Option 4		Option 5		Option 6		Options 7-8								8		7	Option	9	10														
p-	Nitroaniline	100-00-6			✓			0.0	207	1.3	2.0	0.0	3.3	265	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	1.0	342	2.0	290	2.0	338	1.4	323						✓		2			✓		2						
N-	Methylaniline	100-61-8			✓	✓		0.0	207	1.3	3.0	0.0	4.3	99	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	3.0	92	3.0	76	3.0	138	2.2	165						✓		2			✓		2						
3,5-	Dichloro-2,4-difluorobenzoyl fl**	101513-70-6			✓			0.0	207	1.3	2.0	0.0	3.3	265	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	1.0	342	2.0	290	2.0	338	1.4	323						✓	✓	2			✓		2						
3-(Bis(2-	Ethylexyl)aminomethyl)benzoth**	105254-85-1			✓	✓		0.0	207	1.3	3.0	0.0	4.3	99	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	3.0	92	3.0	76	3.0	138	2.2	165						✓		2			✓		2						
2-	Piperazin-1-ylethylamine	140-31-4			✓			0.0	207	1.3	2.0	0.0	3.3	265	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	1.0	342	2.0	290	2.0	338	1.4	323						✓	✓	2			✓		2						
	Isophorone diamine	2855-13-2			✓	✓		0.0	207	1.3	2.0	0.0	3.3	265	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	1.0	342	2.0	290	2.0	338	1.4	323						✓	✓	2			✓		2						
m-	Phenylenediamine dihydrochlor**	541-69-5			✓	✓		0.0	207	1.3	3.0	0.0	4.3	99	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	3.0	92	3.0	76	3.0	138	2.2	165						✓		2			✓		2						
3-	Chloro-2-methylpropene	563-47-3			✓	✓		0.0	207	1.3	2.5	0.0	3.8	176	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	2.0	240	2.5	193	2.5	268	1.8	245						✓	✓	2			✓		2						
2,5-	Diaminotoluene sulphate	615-50-9			✓	✓		0.0	207	1.3	3.0	0.0	4.3	99	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	3.0	92	3.0	76	3.0	138	2.2	165						✓	✓	2			✓		2						
N-	Methyl-p-toluidine	623-08-5			✓			0.0	207	1.3	2.0	0.0	3.3	265	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	1.0	342	2.0	290	2.0	338	1.4	323						✓		2			✓		2						
N,N-bis(2-	Ethylexyl)-((1,2,4-triazol-1-yl)**	91273-04-0			✓	✓		0.0	207	1.3	2.5	0.0	3.8	176	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	2.0	240	2.5	193	2.5	268	1.8	245						✓		2			✓		2						
o-	Diaminobenzene	95-54-5			✓	✓		0.0	207	1.3	3.0	0.0	4.3	99	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	3.0	92	3.0	76	3.0	138	2.2	165						✓		2			✓		2						
1-	Amino-3-nitrobenzene	99-09-2			✓	✓		0.0	207	1.3	2.0	0.0	3.3	265	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	1.0	342	2.0	290	2.0	338	1.4	323						✓		2			✓		2						
p-	Nitrotoluene	99-99-0			✓	✓		0.0	207	1.3	2.5	0.0	3.8	176	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	2.0	240	2.5	193	2.5	268	1.8	245						✓		2			✓		2						
2-	Propen-1-ol	107-18-6			✓	✓		0.0	207	1.0	1.5	0.0	2.5	348	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.0	305	3.0	92	1.5	368	3.0	138	1.6	283						✓	✓	2					0						
	Ethyl chloroacetate	105-39-5			✓	✓		0.0	207	1.0	1.5	0.0	2.5	348	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.0	305	3.0	92	1.5	368	3.0	138	1.6	283						✓		2					0						
	Benzyl-2-hydroxydodecyldime**	113694-52-3			✓			0.0	207	1.0	3.0	0.0	4.0	147	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.0	305	3.0	92	3.0	76	3.0	138	2.0	205						✓	✓	2					0						
12-14-tert-	Alkylamine, methylphosphonic **	119415-07-5			✓			0.0	207	1.0	2.5	0.0	3.5	224	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.0	305	2.0	240	2.5	193	2.5	268	1.6	283						✓	✓	2					0						
2,6-	Dichloro-4-nitroanisole	17742-69-7			✓			0.0	207	1.0	2.5	0.0	3.5	224	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.0	305	2.0	240	2.5	193	2.5	268	1.6	283						✓		2					0						
	Mecarbam	2595-54-2			✓			0.0	207	1.0	3.0	0.0	4.0	147	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.0	305	3.0	92	3.0	76	3.0	138	2.0	205						✓		2					0						
	Chloroacetic acid	79-11-8			✓	✓		0.0	207	1.0	1.5	0.0	2.5	348	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.0	305	3.0	92	1.5	368	3.0	138	1.6	283						✓		2					0						
3-(3-	Methylpent-3-yl)isoxazol-5-yla**	82560-06-3			✓			0.0	207	1.0	2.0	0.0	3.0	296	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.0	305	1.0	342	2.0	290	2.0	338	1.3	358						✓		2					0						
3,3'-	Dichlorobenzidine, salts of	612-83-9			✓	✓	✓	0.0	207	1.2	3.0	0.0	4.2	134	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	1.0	295	1.3	141	3.0	92	3.0	76	3.0	138	2.1	190							✓	1			✓		2			✓			
4,4'-	Methylenedi-o-toluidine	838-88-0			✓			0.0	207	1.2	3.0	0.0	4.2	134	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	1.0	295	1.3	141	3.0	92	3.0	76	3.0	138	2.1	190							✓	1			✓		2			✓			
2-	Naphthylamine	91-59-8			✓			0.0	207	1.0	2.5	0.0	3.5	224	0.0	207	0.0	201	3	3	2	8	18	12	38	18	18	1.0	295	1.0	169	2.0	240	2.5	193	2.5	268	1.6	283			✓				✓	1					0		✓				
S-	Benzyl N,N-dipropylthiocarbamate	52888-80-9			✓			0.0	207	1.0	2.5	0.0	3.5	224	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	1.0	295	1.0	169	2.0	240	2.5	193	2.5	268	1.6	283							✓	1		✓			3						
	Bromobenzylbromotoluene mix**	99688-47-8			✓			0.0	207	1.0	3.0	0.0	4.0	147	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	1.0	295	1.0	169	3.0	92	3.0	76	3.0	138	2.0	205							✓	1		✓	✓		3						
2-	Naphthylamine, salts of	553-00-4			✓		✓	0.0	207	0.8	2.5	0.0	3.3	265	0.0	207	0.0	201	2	3	2	7	56	10	95	12	56	1.0	295	0.7	194	2.0	240	2.5	193	2.5	268	1.5	302			✓				✓	1					0			✓			
	Isobutyl 3,4-epoxybutyrate	100181-71-3			✓			0.0	207	0.8	3.0	0.0	3.8	176	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	1.0	295	0.7	194	3.0	92	3.0	76	3.0	138	1.9	221							✓	1			✓		2						
3,3'-	Dimethylbenzidine, salts of	612-82-8			✓		✓	0.0	207	0.8	2.5	0.0	3.3	265	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	1.0	295	0.7	194	2.0	240	2.5	193	2.5	268	1.5	302							✓	1					0			✓			
6-	Methyl-2,4-bis(methylthio)phen**	106264-79-3			✓	✓		0.0	207	0.8	3.0	0.0	3.8	176	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	1.0	295	0.7	194	3.0	92	3.0	76	3.0	138	1.9	221							✓	1			✓		2						
	Benzothiazole-2-thiol	149-30-4			✓	✓		0.0	207	0.8	3.0	0.0	3.8	176	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	1.0	295	0.7	194	3.0	92	3.0	76	3.0	138	1.9	221		1					1			✓			2						
4-	Chloro-3-methylphenol	59-50-7			✓	✓		0.0	207	0.8	1.5	0.0	2.3	378	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	1.0	295	0.7	194	3.0	92	1.5	368	3.0	138	1.5	302							✓	1			✓		2						
Bis(2-	Ethylexyl)dithiodiacetate	62268-47-7			✓	✓		0.0	207	0.8	2.5	0.0	3.3	265	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	1.0	295	0.7	194	2.0	240	2.5	193	2.5	268	1.5	302							✓	1			✓		2						
	Mirex ##	2385-85-5			✓	✓		0.0	207	0.8	3.0	0.0	3.8	176	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.7	194	3.0	92	3.0	76	3.0	138	1.9	221							✓	1					0						✓
	Chlordane #	57-74-9			✓	✓		0.0	207	0.7	3.0	0.0	3.7	203	0.0	207	0.0	201	1	3	3	7	56	12	38	9	82	1.0	295	0.3	269	3.0	92	3.0	76	3.0	138	1.8	239							✓	1					0						✓
1,2-	Dichloroethylene	540-59-0			✓	✓		0.0	207	0.5	2.0	0.0	2.5	348	0.0	207	0.0	201	1	3	3	7	56	12	38	9	82	1.0	295	0.0	305	1.0	342	2.0	290	2.0	338	1.0	368							✓	1					0						
1,1-	Dichloroethane	75-34-3			✓	✓		0.0	207	0.5	2.0	0.0	2.5	348	0.0	207	0.0	201	1	3	2	6	132	8	131	6	131	1.0	295	0.0	305	1.0	342	2.0	290	2.0	338	1.0	368							✓	1					0						
	Chlorobenzene	108-90-7			✓	✓		0.0	207	0.5	2.5	0.0	3.0	296	0.0	207	0.0	201	1	3	2	6	132	8	131	6	131	1.0	295	0.0	305	2.0	240	2.5	193	2.5	268	1.4	334							✓	1					0						
1-	Naphthylamine	134-32-7			✓	✓		0.0	207	0.5	2.5	0.0	3.0	296	0.0	207	0.0	201	1	3	2	6	132	8	131	6	131	1.0	295	0.0	305	2.0	240	2.5	193	2.5	268	1.4	334							✓	1					0						
	Pentachloronaphthalene	1321-64-8			✓			0.0	207	0.5	3.0	0.0	3.5	224	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	3.0	92	3.0	76	3.0	138	1.8	260							✓	1					0						
	Guazatine	13516-27-3			✓			0.0	207	0.5	3.0	0.0	3.5	224	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	3.0	92	3.0	76	3.0	138	1.8	260							✓	1					0						
3,5-	Dichloro-4-(1,1,2,2-tetrafluoro**	104147-32-2			✓			0.0	207	0.5	3.0	0.0	3.5	224	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	3.0	92	3.0	76	3.0	138	1.8	260							✓	1					0						
p-	Chlorotoluene	106-43-4			✓	✓		0.0	207	0.5	2.5	0.0	3.0	296	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	2.0	240	2.5	193	2.5	268	1.4	334							✓	1					0						
3-	Chlorotoluene	108-41-8			✓	✓		0.0	207	0.5	2.5	0.0	3.0	296	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	2.0	240	2.5	193	2.5	268	1.4	334							✓	1					0						
	Chlorotoluene (mixed isomers)	25168-05-2			✓	✓	✓	0.0	207	0.5	2.5	0.0	3.0	296	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	2.0	240	2.5	193	2.5	268	1.4	334							✓	1					0						
	Cyanophos	2636-26-2			✓			0.0	207	0.5	3.0	0.0	3.5	224	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	3.0	92	3.0	76	3.0	138	1.8	260							✓	1					0						
2-(2-	Bromoethoxy)anisole	4463-59-6			✓			0.0	207	0.5	2.0	0.0	2.5	348	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	1.0	342	2.0	290	2.0	338	1.0	368							✓	1					0						
3-	Aminophenol	591-27-5			✓	✓		0.0	207	0.5	2.5	0.0	3.0	296	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	2.0	240	2.5	193	2.5	268	1.4	334							✓	1					0						
	Pentachlorobenzene +	608-93-5			✓	✓		0.0	207	0.5	3.0	0.0	3.5	224	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	3.0	92	3.0	76	3.0	138	1.8	260							✓	1					0						
S-(1-	Methyl-1-phenylethyl)piperidin**	61432-55-1			✓			0.0	207	0.5	2.5	0.0	3.0	296	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	2.0	240	2.5	193	2.5	268	1.4	334							✓	1					0						
2-	Methyl-1-(4-methyltiophenyl)-2**	71868-10-5			✓	✓		0.0	207	0.5	2.5	0.0	3.0	296	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	2.0	240	2.5	193	2.5	268	1.4	334							✓	1					0						
3-(2-(	Diaminomethyleneamino)thiazol**	76823-93-3			✓			0.0	207	0.5	2.0	0.0	2.5	348	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	1.0	342	2.0	290	2.0	338	1.0	368							✓	1					0						
	Menazon	78-57-9			✓			0.0	207	0.5	2.0	0.0	2.5	348	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	1.0	342	2.0	290	2.0	338	1.0	368							✓	1					0						
2-	Amino-4,6-dinitrophenol	96-91-3			✓	✓		0.0	207	0.5	2.0	0.0	2.5	348	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	1.0	342	2.0	290	2.0	338	1.0	368							✓	1					0						
kis(4,6-bis(	Butyl-(n-methyl-2,2,6,6-tetrame**	106990-43-6			✓	✓		0.0	207	0.3	2.5	0.0	2.8	329	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	0.0	369	0.7	194	2.0	240	2.5	193	2.5	268	1.3	353								0			✓		2						

			PAN	PAN	EC	AICS	Gen	NPI		Scores (normalised)					(H+En)xEx	(HxEnxEx)		Scores (maximum)					(H+En)xEx	(HxEnxEx)		(Harley Wright)												Hlth	1	2	Acute Toxicity					Chronic Toxicity					Carcinogenicity			
prefix	Substance Name	CAS No	List	Rank	List			Risk	Rank	Hlth	Env	Exp	H+En+Ex					Hlth	Env	Exp	H+En+Ex					A H		C H		A E		C E								Env	1	2	Dflt	EC				Dflt	EC				Dflt	EC		
																										/exp		/exp		/exp		/exp		Max	Rank	Ave	Rank	Exp	1	2		Vtox	Tox	Harm	Tot		1	2	3	Tot		1	2	3
	Count		141	146	360	296	41	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391		55	82	148	61	143	198	391	147	33	100	0	391	146	9	30	31
							Option	2					Option 1		Option 2		Option 3				Option 4		Option 5		Option 6	Options 7-8								8		7	Option	9	10														
	Methylene dithiocyanate	6317-18-6			✓	✓		0.0	207	0.3	1.5	0.0	1.8	386	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	0.0	369	0.7	194	3.0	92	1.5	368	3.0	138	1.3	353							0			✓		2				
Bis(4-	Dodecylphenyl)iodonium hexafl**	71786-70-4			✓			0.0	207	0.3	2.0	0.0	2.3	374	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	0.0	369	0.7	194	1.0	342	2.0	290	2.0	338	0.9	380							0			✓		2				
1,5-	Naphthylenediamine	2243-62-1			✓			0.0	207	0.2	3.0	0.0	3.2	286	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	0.0	369	0.3	269	3.0	92	3.0	76	3.0	138	1.6	295							0					0				✓
	Diphenylamine	122-39-4			✓	✓		0.0	207	0.0	3.0	0.0	3.0	296	0.0	207	0.0	201	0	3	0	3	380	0	218	0	212	0.0	369	0.0	305	3.0	92	3.0	76	3.0	138	1.5	312							0					0				
	Morphotion	144-41-2			✓			0.0	207	0.0	3.0	0.0	3.0	296	0.0	207	0.0	201	0	3	0	3	380	0	218	0	212	0.0	369	0.0	305	3.0	92	3.0	76	3.0	138	1.5	312							0					0				
(N-	Benzyl-N-ethyl)amino-3'-hyd…**	55845-90-4			✓			0.0	207	0.0	2.5	0.0	2.5	348	0.0	207	0.0	201	0	3	0	3	380	0	218	0	212	0.0	369	0.0	305	2.0	240	2.5	193	2.5	268	1.1	362							0					0				
	Methyl alpha-((4,6-dimethoxyp**	83055-99-6			✓			0.0	207	0.0	2.5	0.0	2.5	348	0.0	207	0.0	201	0	3	0	3	380	0	218	0	212	0.0	369	0.0	305	2.0	240	2.5	193	2.5	268	1.1	362							0					0				
	Disodium 1-amino-4-(4-benzen**	85153-93-1			✓	✓		0.0	207	0.0	2.0	0.0	2.0	382	0.0	207	0.0	201	0	3	0	3	380	0	218	0	212	0.0	369	0.0	305	1.0	342	2.0	290	2.0	338	0.8	386							0					0				
	Hydroxylamine	7803-49-8			✓	✓		0.0	207	2.5	1.8	0.0	4.3	99	0.0	207	0.0	201	3	3	1	7	56	6	147	9	82	3.0	74	2.0	90	3.0	92	1.8	343	3.0	138	2.5	102				✓		✓	3		✓			3				
o-	Anisidine	90-04-0			✓	✓		0.0	207	2.3	2.5	0.0	4.8	38	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	1.7	119	2.0	240	2.5	193	3.0	138	2.3	137				✓			3			✓		2		✓		
3-	Chloropropene	107-05-1			✓	✓		0.0	207	1.8	3.0	0.0	4.8	42	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.7	194	3.0	92	3.0	76	3.0	138	2.4	108				✓			3					0				
2,4-	Dinitroaniline	97-02-9			✓	✓		0.0	207	1.8	2.5	0.0	4.3	99	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.7	194	2.0	240	2.5	193	3.0	138	2.0	195				✓			3			✓		2				
	Fentin hydroxide	76-87-9			✓	✓		0.0	207	1.5	3.0	0.0	4.5	73	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.0	305	3.0	92	3.0	76	3.0	138	2.3	145				✓	✓	✓	3					0				
	Isodrin +	465-73-6			✓			0.0	207	1.5	3.0	0.0	4.5	73	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.0	305	3.0	92	3.0	76	3.0	138	2.3	145				✓			3					0				
N-	Methyl-o-toluidine	611-21-2			✓			0.0	207	1.5	2.0	0.0	3.5	224	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.0	305	1.0	342	2.0	290	3.0	138	1.5	312				✓	✓	✓	3					0				
	Pentachloroethane	76-01-7			✓	✓		0.0	207	1.7	2.5	0.0	4.2	134	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	2.0	177	1.3	141	2.0	240	2.5	193	2.5	268	2.0	217					✓		2		✓			3				✓
1-	Dodecyl-2-pyrrolidone	2687-96-9			✓	✓		0.0	207	1.3	3.0	0.0	4.3	99	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	3.0	92	3.0	76	3.0	138	2.2	165					✓		2			✓		2				
	Chloroaniline (mixed isomers)	27134-26-5			✓		✓	0.0	207	1.3	3.0	0.0	4.3	99	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	3.0	92	3.0	76	3.0	138	2.2	165					✓		2			✓		2				
N-	Methyl-m-toluidine	696-44-6			✓			0.0	207	1.3	2.0	0.0	3.3	265	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	1.0	342	2.0	290	2.0	338	1.4	323					✓		2			✓		2				
N,N-	Diethylaniline	91-66-7			✓	✓		0.0	207	1.3	2.5	0.0	3.8	176	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	2.0	240	2.5	193	2.5	268	1.8	245					✓		2			✓		2				
2-	Methyl-p-phenylenediamine	95-70-5			✓	✓		0.0	207	1.3	3.0	0.0	4.3	99	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	3.0	92	3.0	76	3.0	138	2.2	165					✓	✓	2			✓		2				
	Dicyclohexylamine	101-83-7			✓	✓		0.0	207	1.0	3.0	0.0	4.0	147	0.0	207	0.0	201	2	3	2	7	56	10	95	12	56	2.0	177	0.0	305	3.0	92	3.0	76	3.0	138	2.0	205					✓	✓	2					0				
	Lindane +	58-89-9			✓	✓		0.0	207	1.0	3.0	0.0	4.0	147	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.0	305	3.0	92	3.0	76	3.0	138	2.0	205					✓	✓	2					0				
1,1-	Dichloropropene	563-58-6			✓			0.0	207	1.0	2.0	0.0	3.0	296	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.0	305	1.0	342	2.0	290	2.0	338	1.3	358					✓		2					0				
4,4-	Benzidine (Diaminobiphenyl)	92-87-5			✓	✓		0.0	207	1.0	3.0	0.0	4.0	147	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	1.0	295	1.0	169	3.0	92	3.0	76	3.0	138	2.0	205						✓	1			✓		0				
N,N-	Dimethyl-2-(3-(4-chlorophenyl)**	10357-99-0			✓	✓		0.0	207	1.0	2.5	0.0	3.5	224	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	1.0	295	1.0	169	2.0	240	2.5	193	2.5	268	1.6	283						✓	1			✓	✓	3				
	Dichlofluanid	1085-98-9			✓	✓		0.0	207	0.8	3.0	0.0	3.8	176	0.0	207	0.0	201	2	3	2	7	56	10	95	12	56	1.0	295	0.7	194	3.0	92	3.0	76	3.0	138	1.9	221			✓			✓	1			✓		2				
1-	Methyl-3-nitro-1-nitrosoguanidin	70-25-7			✓			0.0	207	0.8	2.5	0.0	3.3	265	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	1.0	295	0.7	194	2.0	240	2.5	193	2.5	268	1.5	302						✓	1					0			✓	
3,3-	Dimethylbenzidine	119-93-7			✓	✓		0.0	207	0.8	2.5	0.0	3.3	265	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	1.0	295	0.7	194	2.0	240	2.5	193	2.5	268	1.5	302						✓	1					0			✓	
2,4-di-tert-	Butylcyclohexanone	13019-04-0			✓	✓		0.0	207	0.5	2.5	0.0	3.0	296	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	2.0	240	2.5	193	2.5	268	1.4	334						✓	1					0				
2-	Bromo-2-nitropropane-1,3-diol	52-51-7			✓	✓		0.0	207	0.5	3.0	0.0	3.5	224	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	3.0	92	3.0	76	3.0	138	1.8	260						✓	1					0				
	Dicyclopentadiene	77-73-6			✓	✓		0.0	207	0.5	2.5	0.0	3.0	296	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	2.0	240	2.5	193	2.5	268	1.4	334						✓	1					0				
	Potassium-2-hydroxycarbazol**	96566-70-0			✓			0.0	207	0.5	2.0	0.0	2.5	348	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	1.0	342	2.0	290	2.0	338	1.0	368						✓	1					0				
4-	Aminophenol	123-30-8			✓	✓		0.0	207	0.7	3.0	0.0	3.7	203	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.3	269	3.0	92	3.0	76	3.0	138	1.8	239						✓	1					0				✓
	Benzyltributhylammonium 4-hy**	102561-46-6			✓	✓		0.0	207	0.5	2.5	0.0	3.0	296	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	2.0	240	2.5	193	2.5	268	1.4	334						✓	1					0				
2-	Chloro-4-nitroaniline	121-87-9			✓	✓		0.0	207	0.5	2.5	0.0	3.0	296	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	2.0	240	2.5	193	2.5	268	1.4	334						✓	1					0				
	Methylene dibromide	74-95-3			✓	✓		0.0	207	0.5	2.0	0.0	2.5	348	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	1.0	342	2.0	290	2.0	338	1.0	368						✓	1					0				
Exo-(+/-)-1-	Methyl-2-(2-methylbenzyloxy)-**	87818-31-3			✓			0.0	207	0.5	2.5	0.0	3.0	296	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	2.0	240	2.5	193	2.5	268	1.4	334						✓	1					0				
3-(N-	Methyl-N-(4-methylamino-3-nit**	93633-79-5			✓			0.0	207	0.5	2.0	0.0	2.5	348	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	1.0	342	2.0	290	2.0	338	1.0	368						✓	1					0				
o-	Chlorotoluene	95-49-8			✓	✓		0.0	207	0.5	2.5	0.0	3.0	296	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	2.0	240	2.5	193	2.5	268	1.4	334						✓	1					0				
3-	Chloro-4,5,alpha,alpha,alpha-p**	77227-99-7			✓			0.0	207	0.5	0.0	0.0	0.5	391	0.0	207	0.0	201	1	0	0	1	390	0	218	0	212	1.0	295	0.0	305	0.0	387	0.0	391	1.0	391	0.3	391						✓	1					0				
2'-(2-	Cyano-4,6-dinitrophenylazo)-5**	106359-94-8			✓			0.0	207	0.3	2.0	0.0	2.3	374	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	0.0	369	0.7	194	1.0	342	2.0	290	2.0	338	0.9	380							0			✓		2				
N-(4-(3-(4-	Cyanophenyl)ureido)-3-hydrox**	108673-51-4			✓			0.0	207	0.3	1.5	0.0	1.8	386	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	0.0	369	0.7	194	0.0	387	1.5	368	1.5	386	0.5	389							0			✓		2				
	Methyl 2-(3-nitrobenzylidene)**	39562-17-9			✓			0.0	207	0.3	3.0	0.0	3.3	259	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	0.0	369	0.7	194	3.0	92	3.0	76	3.0	138	1.7	280							0			✓		2				
	Methyl-2-(2-nitrobenzylidene)**	39562-27-1			✓			0.0	207	0.3	2.5	0.0	2.8	329	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	0.0	369	0.7	194	2.0	240	2.5	193	2.5	268	1.3	353							0			✓		2				
4,4'-	Oxibys(ethylenethio)diphenol	90884-29-0			✓			0.0	207	0.3	2.5	0.0	2.8	329	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	0.0	369	0.7	194	2.0	240	2.5	193	2.5	268	1.3	353							0			✓		2				
4,4'-	Isobutylethylidenediphenol	6807-17-6			✓			0.0	207	0.0	3.0	0.0	3.0	296	0.0	207	0.0	201	0	3	0	3	380	0	218	0	212	0.0	369	0.0	305	3.0	92	3.0	76	3.0	138	1.5	312							0					0				
2(3-(	Prop-1-en-2-yl)phenyl)prop-2-**	2094-99-7			✓	✓		0.0	207	2.0	3.0	0.0	5.0	26	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	1.0	169	3.0	92	3.0	76	3.0	138	2.5	94				✓	✓	✓	3		✓	✓		3				
1,4-	Dichlorobut-2-ene	764-41-0			✓	✓		0.0	207	1.8	3.0	0.0	4.8	42	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.7	194	3.0	92	3.0	76	3.0	138	2.4	108				✓	✓		3					0			✓	
p-	Anisidine	104-94-9			✓	✓		0.0	207	1.8	1.5	0.0	3.3	265	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.7	194	3.0	92	1.5	368	3.0	138	2.0	195				✓			3			✓		2				
1,3-	Dichloro-5-ethyl-5-methylimida.**	89415-87-2			✓	✓		0.0	207	1.8	1.5	0.0	3.3	265	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.7	194	3.0	92	1.5	368	3.0	138	2.0	195				✓	✓	✓	3			✓		2				
	Pentachlorophenol +	87-86-5			✓	✓		0.0	207	1.7	3.0	0.0	4.7	59	0.0	207	0.0	201	3	3	3	9	1	18	1	27	1	3.0	74	0.3	269	3.0	92	3.0	76	3.0	138	2.3	120			✓		✓	✓	3					0				✓
	Mephasfolan	950-10-7			✓			0.0	207	1.5	2.5	0.0	4.0	147	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.0	305	2.0	240	2.5	193	3.0	138	1.9	232				✓			3					0				
	Isobenzan	297-78-9			✓			0.0	207	1.5	1.5	0.0	3.0	296	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.0	305	3.0	92	1.5	368	3.0	138	1.9	232				✓			3					0				
1,2-	Dibromo-3-chloropropane	96-12-8			✓			0.0	207	2.3	2.0	0.0	4.3	99	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	2.0	177	2.7	49	1.0	342	2.0	290	2.7	256	1.9	221					✓	✓	2		✓			3			✓	
N,N-	Hydrazinodiacetic acid	19247-05-3			✓			0.0	207	1.5	2.0	0.0	3.5	224	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	2.0	177	1.0	169	1.0	342	2.0	290	2.0	338	1.5	312					✓	✓	2		✓	✓		3				

			PAN	PAN	EC	AICS	Gen	NPI		Scores (normalised)					(H+En)xEx		(HxEnxEx)		Scores (maximum)					(H+En)xEx		(HxEnxEx)		(Harley Wright)												Hlth	1	2	Acute Toxicity					Chronic Toxicity					Carcinogenicity			
prefix	Substance Name	CAS No	List	Rank	List			Risk	Rank	Hlth	Env	Exp	H+En+Ex		(H+En)xEx		(HxEnxEx)		Hlth	Env	Exp	H+En+Ex		(H+En)xEx		(HxEnxEx)		A H		C H		A E		C E								Env	1	2	Dflt	EC				Dflt	EC				Dflt	EC		
																													/exp		/exp		/exp		/exp		Max	Rank	Ave	Rank	Exp	1	2		Vtox	Tox	Harm	Tot		1	2	3	Tot		1	2	3
	Count		141	146	360	296	41	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391		55	82	148	61	143	198	391	147	33	100	0	391	146	9	30	31
							Option	2					Option 1		Option 2		Option 3					Option 4		Option 5		Option 6		Options 7-8								8		7	Option	9	10													
Z-1,3-	Dichloropropene	10061-01-5			✓			0.0	207	1.3	3.0	0.0	4.3	99	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	3.0	92	3.0	76	3.0	138	2.2	165						✓	✓	2			✓		2						
N,N-	Dimethyltoluidine	29526-93-7			✓			0.0	207	1.3	2.0	0.0	3.3	265	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	1.0	342	2.0	290	2.0	338	1.4	323						✓		2			✓		2						
	Pentaethylenehexamine	4067-16-7			✓	✓		0.0	207	1.3	3.0	0.0	4.3	99	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	3.0	92	3.0	76	3.0	138	2.2	165						✓		2			✓		2						
p-	Phenylenediamine dihydrochlor**	624-18-0			✓	✓		0.0	207	1.3	3.0	0.0	4.3	99	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	3.0	92	3.0	76	3.0	138	2.2	165						✓		2			✓		2						
	Benzyldimethylamine	103-83-3			✓	✓		0.0	207	1.0	2.0	0.0	3.0	296	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.0	305	1.0	342	2.0	290	2.0	338	1.3	358						✓	✓	2					0						
	Phenkapton	2275-14-1			✓			0.0	207	1.0	3.0	0.0	4.0	147	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.0	305	3.0	92	3.0	76	3.0	138	2.0	205						✓		2					0						
2,2'-	Dimethyl-4,4'methylenebis(cyc**	6864-37-5			✓	✓		0.0	207	1.0	2.5	0.0	3.5	224	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.0	305	2.0	240	2.5	193	2.5	268	1.6	283						✓	✓	2					0						
(2-(1,3-	Dioxolan-2-yl)ethyl)triphenyl….**	86608-70-0			✓			0.0	207	0.8	2.0	0.0	2.8	334	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	1.0	295	0.7	194	1.0	342	2.0	290	2.0	338	1.2	361							✓	1			✓		2						
m-	Mentha-1,3(8)-diene	17092-80-7			✓	✓		0.0	207	0.5	2.5	0.0	3.0	296	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	2.0	240	2.5	193	2.5	268	1.4	334							✓	1					0						
4-	Methyl-m-phenylenediamine	95-70-8			✓	✓		0.0	207	0.5	3.0	0.0	3.5	224	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	3.0	92	3.0	76	3.0	138	1.8	260							✓	1					0						
1-	Butyl-2-methylpiridinium bromide	26576-84-1			✓			0.0	207	0.5	2.0	0.0	2.5	348	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	1.0	342	2.0	290	2.0	338	1.0	368							✓	1					0						
	Methyl 3-(3-tert-butyl-4-hydrox**	6386-39-6			✓			0.0	207	0.5	2.5	0.0	3.0	296	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	2.0	240	2.5	193	2.5	268	1.4	334							✓	1					0						
3-	Chloro-5-trifluoromethyl-2-pyri**	79456-26-1			✓			0.0	207	0.5	2.0	0.0	2.5	348	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	1.0	342	2.0	290	2.0	338	1.0	368							✓	1					0						
	Haloxifop-(2-ethoxyethyl)	87237-48-7			✓			0.0	207	0.5	3.0	0.0	3.5	224	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	3.0	92	3.0	76	3.0	138	1.8	260							✓	1					0						
amino-3((5-	Carboxymethyl-4-methyl-1,3-th**	111298-82-9			✓			0.0	207	0.3	2.0	0.0	2.3	374	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	0.0	369	0.7	194	1.0	342	2.0	290	2.0	338	0.9	380								0			✓		2						
6-(2,3-	Dimethylmaleimido)hexyl metha**	63740-41-0			✓			0.0	207	0.3	2.5	0.0	2.8	329	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	0.0	369	0.7	194	2.0	240	2.5	193	2.5	268	1.3	353								0			✓		2						
	Trisodium bis (2-(5-chloro-4-ni**	93952-24-0			✓	✓		0.0	207	0.0	2.0	0.0	2.0	382	0.0	207	0.0	201	0	1	0	1	390	0	218	0	212	0.0	369	0.0	305	1.0	342	2.0	290	2.0	338	0.8	386								0					0						
1,1,2,2-	Tetrabromoethane	79-27-6			✓	✓		0.0	207	1.5	2.0	0.0	3.5	224	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.0	305	1.0	342	2.0	290	3.0	138	1.5	312				✓		✓		3					0						
	Trichloronate	327-98-0			✓			0.0	207	1.5	3.0	0.0	4.5	73	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	3.0	74	0.0	305	3.0	92	3.0	76	3.0	138	2.3	145				✓	✓			3					0						
1,3,5-	TGIC - Tris(oxiranylmethyl)-1,3,5-t	2451-62-9			✓	✓		0.0	207	1.8	2.0	0.0	3.8	172	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	2.0	177	1.7	119	1.0	342	2.0	290	2.0	338	1.7	279					✓	✓		2			✓		2		✓	✓			
	Toluene-2,4-diammonium sulphat	65321-67-7			✓	✓		0.0	207	1.7	3.0	0.0	4.7	67	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	1.3	141	3.0	92	3.0	76	3.0	138	2.3	128					✓	✓		2			✓		2			✓			
	Carbon tetrachloride ^	56-23-5			✓	✓		0.0	207	1.7	2.0	0.0	3.7	203	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	2.0	177	1.3	141	1.0	342	2.0	290	2.0	338	1.6	298					✓			2		✓			3						✓
	Tricresyl phosphate (mixed isome	78-30-8			✓	✓	✓	0.0	207	1.5	2.5	0.0	4.0	147	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	2.0	177	1.0	169	2.0	240	2.5	193	2.5	268	1.9	232					✓			2		✓			3						
p-	Toluidine	106-49-0			✓	✓		0.0	207	1.3	1.5	0.0	2.8	334	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	3.0	92	1.5	368	3.0	138	1.8	245					✓			2			✓		2						
m-	Toluidine	108-44-1			✓	✓		0.0	207	1.3	1.5	0.0	2.8	334	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	3.0	92	1.5	368	3.0	138	1.8	245					✓			2			✓		2						
Tetrakis(	Tetramethylammonium) 6-amino**	116340-05-7			✓	✓		0.0	207	1.3	2.0	0.0	3.3	265	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	1.0	342	2.0	290	2.0	338	1.4	323					✓			2			✓		2						
	Sodium-5-n-butylbenzotriazole	118685-34-0			✓	✓		0.0	207	1.3	2.5	0.0	3.8	176	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	2.0	240	2.5	193	2.5	268	1.8	245					✓	✓		2			✓		2						
hexakis(	Tetramethylammonium) 4,4'-vin**	124537-30-0			✓	✓		0.0	207	1.3	2.0	0.0	3.3	265	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	1.0	342	2.0	290	2.0	338	1.4	323					✓			2			✓		2						
C8-18	Alkylbis(2-hydroxyethyl)ammo**	68132-19-4			✓			0.0	207	1.3	3.0	0.0	4.3	99	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	3.0	92	3.0	76	3.0	138	2.2	165					✓			2			✓		2						
1-	Amino-2-nitrobenzene	88-74-4			✓	✓		0.0	207	1.3	2.0	0.0	3.3	265	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	1.0	342	2.0	290	2.0	338	1.4	323					✓			2			✓		2						
2,3,4-	Trichlorobut-1-ene	2431-50-7			✓			0.0	207	1.2	3.0	0.0	4.2	126	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.3	269	3.0	92	3.0	76	3.0	138	2.1	186					✓	✓		2					0						✓
	Allylamine	107-11-9			✓	✓		0.0	207	1.0	2.5	0.0	3.5	224	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.0	305	2.0	240	2.5	193	2.5	268	1.6	283					✓			2					0						
	Vamidothion	2275-23-2			✓	✓		0.0	207	1.0	1.5	0.0	2.5	348	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.0	305	3.0	92	1.5	368	3.0	138	1.6	283					✓	✓		2					0						
	Tricresyl phosphate (mixed isome	78-32-0			✓	✓	✓	0.0	207	1.0	2.5	0.0	3.5	224	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.0	305	2.0	240	2.5	193	2.5	268	1.6	283					✓	✓		2					0						
4-	Amino-3-fluorophenol	399-95-1			✓			0.0	207	1.2	2.5	0.0	3.7	203	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	1.0	295	1.3	141	2.0	240	2.5	193	2.5	268	1.7	276							✓	1			✓		2			✓			
	Tetradecylammoniumbis(1-(5-**	88377-66-6			✓	✓		0.0	207	1.0	1.5	0.0	2.5	348	0.0	207	0.0	201	3	3	0	6	132	0	218	0	212	1.0	295	1.0	169	0.0	387	1.5	368	1.5	386	0.9	383							✓	1		✓			3						
	Benzidine, salts of	531-85-1			✓		✓	0.0	207	0.8	3.0	0.0	3.8	176	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	1.0	295	0.7	194	3.0	92	3.0	76	3.0	138	1.9	221							✓	1				✓	0						
	Nitrosodipropylamine	621-64-7			✓			0.0	207	0.8	2.5	0.0	3.3	265	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	1.0	295	0.7	194	2.0	240	2.5	193	2.5	268	1.5	302							✓	1				✓	0						
2-	Methyl-m-phenylenediamine	823-40-5			✓	✓		0.0	207	1.0	3.0	0.0	4.0	147	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	1.0	295	1.0	169	3.0	92	3.0	76	3.0	138	2.0	205							✓	1			✓		2						✓
	Toxaphene ##	8001-35-2			✓	✓		0.0	207	0.7	3.0	0.0	3.7	203	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.3	269	3.0	92	3.0	76	3.0	138	1.8	239							✓	1					0						✓
mono-	Bromobenzene	108-86-1			✓	✓		0.0	207	0.5	2.5	0.0	3.0	296	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	2.0	240	2.5	193	2.5	268	1.4	334							✓	1					0						
	Tetrachloro-p-benzoquinone	118-75-2			✓	✓		0.0	207	0.5	3.0	0.0	3.5	224	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	3.0	92	3.0	76	3.0	138	1.8	260							✓	1					0						
2,3,5,6-	Tetrafluorobenzyl trans-2-(2,2-**	118712-89-3			✓			0.0	207	0.5	3.0	0.0	3.5	224	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	3.0	92	3.0	76	3.0	138	1.8	260							✓	1					0						
2-(4-(3-(4-	Chorophenyl)-4,5-dihydropyra**	106359-93-7			✓	✓		0.0	207	0.5	3.0	0.0	3.5	224	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	3.0	92	3.0	76	3.0	138	1.8	260							✓	1					0						
Bis(2,2,6,6-	Tetramethyl-4-piperidyl) succin**	62782-03-0			✓	✓		0.0	207	0.5	2.0	0.0	2.5	348	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	1.0	342	2.0	290	2.0	338	1.0	368							✓	1					0						
),O,O',O',-	Tetrapropyl dithiopyrophosphate	3244-90-4			✓			0.0	207	0.5	3.0	0.0	3.5	224	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	3.0	92	3.0	76	3.0	138	1.8	260							✓	1					0						
	Clopyralid	1702-17-6			✓	✓		0.0	207	0.0	3.0	0.0	3.0	296	0.0	207	0.0	201	0	3	0	3	380	0	218	0	212	0.0	369	0.0	305	3.0	92	3.0	76	3.0	138	1.5	312								0					0						
, N, N', N'-	Tetramethyldithiobis (ethylene)**	17339-60-5			✓	✓		0.0	207	0.0	2.5	0.0	2.5	348	0.0	207	0.0	201	0	3	0	3	380	0	218	0	212	0.0	369	0.0	305	2.0	240	2.5	193	2.5	268	1.1	362								0					0						
4,4'-	Thiodi-o-cresol	24197-34-0			✓	✓		0.0	207	0.0	3.0	0.0	3.0	296	0.0	207	0.0	201	0	3	0	3	380	0	218	0	212	0.0	369	0.0	305	3.0	92	3.0	76	3.0	138	1.5	312								0					0						
2,4,5-	Trichloroaniline	636-30-6			✓	✓		0.0	207	0.0	3.0	0.0	3.0	296	0.0	207	0.0	201	0	3	0	3	380	0	218	0	212	0.0	369	0.0	305	3.0	92	3.0	76	3.0	138	1.5	312								0					0						
	Dimethyldioctadecylammonium **	123312-54-9			✓	✓		0.0	207	0.5	1.5	0.0	2.0	382	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	0.0	387	1.5	368	1.5	386	0.6	388							✓	1					0						
	Tetrachloroterephthalonitrite	1897-41-2			✓			0.0	207	0.3	1.5	0.0	1.8	386	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	0.0	369	0.7	194	0.0	387	1.5	368	1.5	386	0.5	389								0			✓		2						
o-	Nitrotoluene	88-72-2			✓	✓		0.0	207	1.3	2.5	0.0	3.8	176	0.0	207	0.0	201	2	3	0	5	233	0	218	0	212	2.0	177	0.7	194	2.0	240	2.5	193	2.5	268	1.8	245					✓			2			✓		2						
4,8,12-	Trimethyltrideca-3,7,11-trienoic**	91853-67-7			✓	✓		0.0	207	0.5	3.0	0.0	3.5	224	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	3.0	92	3.0	76	3.0	138	1.8	260							✓	1					0						
2,4,6-	Trimethylbenzophenone	954-16-5			✓			0.0	207	0.5	3.0	0.0	3.5	224	0.0	207	0.0	201	1	3	0	4	331	0	218	0	212	1.0	295	0.0	305	3.0	92	3.0	76	3.0	138	1.8	260							✓	1					0						

				Reproduction					Chronic		Acute Environmental					Chronic Environmental								2nd	Envir	Total	PAN	Point	Market Output				Bioavailability			EXP
prefix	Substance Name	CAS No		Dflt	EC				Health	Health	Dflt	EC				Default				EC					Ord	Tot	Hazard	Releases		Dflt	Ind	Tot	Disper	Diff	S/G	Gen	Tot	Tot
			Tot		1	2	3	Tot	Total	Total		Vtox	Tox	Harm		Chr	Pers	Bioac	Tot	53	58	59	Tot	Env	Eff													
																																			Spec	Gen		
	Count		391	147	4	5	5	391	391	391	373	142	67	45	391	385	159	159	391	226	2	5	391	391	3	391	391	146	391	384	106	391	391	391	350	41	391	391
	Oxides of Nitrogen	N/A	0					0	0	1.5					0	3			1				1	0.5	3	3	4.5	6	3	3		3	3	3	G	3	3	3.0
	Chromium (VI) compounds	7440-47-3	2	2				2	2	2.5	3	✓			3	3	3	2	2.67	✓			3	3		3	5.5	5	2.5	3	3	3	1	1	G	3	3	1.8
	Carbon monoxide	630-08-0	0	0	✓			3	2	2	1				1	1	1	0	0.67				0.67	0.83		0.83	2.8	6	3	3	3	3	3	3	S		3	3.0
	Sulphur dioxide	7446-09-5	0	0				0	1	1.5	1				1	1	2	2	1.67				1.67	1.33		1.33	2.8	6	3	3	3	3	3	3	S		3	3.0
	Dichloromethane	75-09-2	1	1				1	1.33	1.67	2				2	1	1	0	0.67				0.67	1.33		1.33	3.0	5	2.5	3	3	3	3	3	S		3	2.8
	Cadmium and compounds	7440-43-9	3	2				2	2.67	2.33	1				1	3	3	3	3				3	2		2	4.3	3	1.5	3		3	2	2	G	3	3	1.8
	Particulate Matter 10.0 um	N/A	1	0				0	1.33	1.17	1				1	3	2	0	1.67				1.67	1.33		1.33	2.5	6	3	3		3	3	3	G	3	3	3.0
	Sulphuric acid^^^	7664-93-9	3	0				0	1.67	2.33	1				1	1	2	2	1.67				1.67	1.33		1.33	3.7	6	3	3	3	3	1	1	S		3	2.0
	Xylenes (individual or mixed isomer	1330-20-7	0	2				2	1.67	1.33	1				1	1	1	1	1				1	1		1	2.3	6	3	3	3	3	3	3	S		3	3.0
	Arsenic and compounds	7440-38-2	3	2				2	2.67	2.33	1				1	2	3	2	2.33				2.33	1.67		1.67	4.0	3	1.5	3	3	3	2	2	G	3	3	1.8
	Lead and compounds	7439-92-1	1	2	✓		✓	3	2.33	1.67					0	3	3	3	3				3	1.5		1.5	3.2	6	3	3	2	2	2	1.33	G	3	3	2.2
	Trichloroethylene	79-01-6	2	1				1	1.67	1.33	2			✓	1	1	1	0	0.67	✓			3	2		2	3.3	4	2	3		3	2	2	S		3	2.0
1,3-	Butadiene (vinyl ethylene)	106-99-0	2	2				2	2.33	2.67	1				1	1	0	0	0.33				0.33	0.67		0.67	3.3	4	2	3	3	3	2	2	S		3	2.0
	Benzene	71-43-2	3	2				2	2.67	2.33	1				1	1	1	1	1				1	1		1	3.3	4	2	3	3	3	2	2	S		3	2.0
	Glutaraldehyde	111-30-8	0					0	0.67	1.83	3	✓			3				0				0	1.5		1.5	3.3		2	2	3	3	2	2	S		3	2.0
	Tetrachloroethylene	127-18-4	1	1				1	1.33	1.17	1		✓		2	1	0	0	0.33	✓			3	2.5		2.5	3.7	3	1.5	3		3	2	2	S		3	1.8
	Total Nitrogen (in solution)	N/A	0					0	0.67	0.83	1				1	3	2	0	1.67				1.67	1.33	3	3	3.8	6	3	3		3	2	2	G	2	2	1.7
	Polycyclic aromatic hydrocarbons	N/A	3	1				1	1.67	1.33	2				2	1	1	1	1				1	1.5		1.5	2.8	3	1.5	3		3	3	3	G	3	3	2.3
2-	Ethoxyethanol	110-80-5	0	2		✓		2	1.33	1.17	0				0	0			0				0	0		0	1.2	4	2	3	3	3	2	2	S		3	2.0
2-	Ethoxyethanol acetate	111-15-9	0	2		✓		2	1.33	1.17	0				0	0			0				0	0		0	1.2	4	2	3	3	3	2	2	S		3	2.0
	Methyl ethyl ketone	78-93-3	0	2				2	1.33	1.17	1				1	1	2	0	1				1	1		1	2.2	5	2.5	3	3	3	3	3	S		3	2.8
	Acetone	67-64-1	0	1				1	1	1.5	0				0	1	1	0	0.67				0.67	0.33		0.33	1.8	6	3	3	3	3	3	3	S		3	3.0
	Ethylene glycol (1,2-ethanediol)	107-21-1	0	2				2	1.33	1.17	1				1	1	1	0	0.67				0.67	0.83		0.83	2.0	5	2.5	3	3	3	3	3	S		3	2.8
	Methanol	67-56-1	0	1				1	1	1.5	2				2	1	0	0	0.33				0.33	1.17		1.17	2.7	6	3	3	3	3	1	1	S		3	2.0
	Nickel carbonyl	13463-39-3	3	2				2	2	2.5	1				1	3	1	2	2				2	1.5		1.5	4.0		2.0	1		1	2	0.67	S	3	3	1.3
	Methyl methacrylate	80-62-6	1	2				2	1.67	1.33	2				2	2	1	1	1.33				1.33	1.67		1.67	3.0	3	1.5	2	2	2	3	2	S		3	1.8
	Total Phosphorus (in solution)	N/A	0					0	0	0.5	1				1	3	3	0	2				2	1.5	2.5	2.5	3.0	6	3	3	3	3	2	2	G	2	2	1.7
	Methyl isobutyl ketone	108-10-1	0	0				0	0.33	0.67	2				2	2	2	1	1.67				1.67	1.83		1.83	2.5	4	2	3	3	3	2	2	S		3	2.0
	Cyanide (inorganic) compounds	N/A	0	1				1	0.67	1.83	3				3	1	2	1	1.33				1.33	2.17		2.17	4.0	3	1.5	3	3	3	1	1	G	3	3	1.3
	Cobalt and compounds	7440-48-4	1	0				0	1	1	2				2	2	2	2	2				2	2		2	3.0	4	2	3		3	3	3	G	2	2	1.7
	Fluoride compounds	N/A	0	1				1	1	1.5	1				1	3	3	2	2.67				2.67	1.83		1.83	3.3	2	1	3		3	2	2	G	3	3	1.5
	Nickel subsulphide	12035-72-2	3	2				2	2	2	1				1	3	2	2	2.33				2.33	1.67		1.67	3.7		2.0	1		1	2	0.67	S	3	3	1.3
	Toluene (methylbenzene)	108-88-3	0	2				2	1.67	1.33	2				2	1	0	1	0.67				0.67	1.33		1.33	2.7	3	1.5	3	3	3	2	2	S		3	1.8
	Toluene-2,4-diisocyanate	584-84-9	1	1				1	1.33	1.67	1				1	1	1	1	1				1	1		1	2.7	3	1.5	3	3	3	2	2	S		3	1.8
	Mercury and compounds	7439-97-6	0	2				2	1.33	1.67	1				1	3	3	3	3				3	2		2	3.7	1	0.5	3		3	2	2	G	3	3	1.3
1,2-	Dibromoethane	106-93-4	2					0	0.67	1.33	2		✓		2	3			1	✓			3	2.5		2.5	3.8	0	1	2		2	2	1.33	S		3	1.2
	Hydrogen sulphide	7783-06-4	0	0				0	0.67	1.83	1	✓			3	1	0	0	0.33				0.33	1.67		1.67	3.5	3	1.5	3	1	1	3	1	S		3	1.3
	Phosphoric acid^^^	7664-38-2	0	0				0	0.33	1.17	1				1	1	1	1	1				1	1		1	2.2	6	3	3	3	3	1	1	S		3	2.0
	Hydrochloric acid^^^	7647-01-0	1	0				0	1	1.5	1				1	1	0	0	0.33				0.33	0.67		0.67	2.2	6	3	3	3	3	1	1	S		3	2.0
	Copper and compounds	7440-50-8	1	0				0	1	1	1				1	2	2	2	2				2	1.5		1.5	2.5	6	3	3	3	3	2	2	G	2	2	1.7
	Chlorine dioxide	10049-04-4	1	2				2	1.67	1.83	2				2	1	1	1	1				1	1.5		1.5	3.3	3	1.5	3		3	1	1	S		3	1.3
	Chlorine	7782-50-5	0	0				0	0.33	1.17	1	✓			3	0	0	0	0				0	1.5		1.5	2.7	4	2	3	3	3	1	1	S		3	1.5
	Nitric acid^^^	7697-37-2	0	0				0	0.67	1.83	1				1	1	1	0	0.67				0.67	0.83		0.83	2.7	4	2	3	3	3	1	1	S		3	1.5
4,4-	Methylene bis 2,4 aniline (MOCA)	101-14-4	2	1				1	1.67	1.33	1	✓			3	1	1	1	1	✓			3	3		3	4.3	3	1.5	2	1	1	1	0.33	S		3	0.9
	Ammonia (total)	7664-41-7	0	0				0	0	1	1	✓			3	0	0	0	0				0	1.5		1.5	2.5	5	2.5	2	2	2	1	0.67	S		3	1.6
	Ethylene oxide	75-21-8	3	2				2	2.67	2.83	1				1	1	1	1	1				1	1		1	3.8	2	1	2	3	3	1	1	S		3	1.0
	Magnesium oxide fume	1309-48-4	0	0				0	0.67	1.33	1				1	1	1	0	0.67				0.67	0.83		0.83	2.2	3	1.5	2		2	3	2	S		3	1.8
	Zinc and compounds	7440-66-6	0	1				1	0.67	0.83	2				2	2	3	1	2				2	2		2	2.8	6	3	3		3	1	1	G	2	2	1.3
	Acrylic acid	79-10-7	0	1				1	1	1.5	1				1	1	1	1	1				1	1		1	2.5	4	2	3	3	3	1	1	S		3	1.5
	Phenol	108-95-2	1	1				1	1.33	1.67	1				1	1	1	0	0.67				0.67	0.83		0.83	2.5	4	2	3	3	3	1	1	S		3	1.5
	Styrene (ethenylbenzene)	100-42-5	2	1				1	2	1.5	1				1	1	1	1	1				1	1		1	2.5	4	2	3	3	3	1	1	S		3	1.5
	Boron and compounds	7440-42-8	0	2				2	1.33	1.67					0	2	3	0	1.67				1.67	0.83		0.83	2.5	2	1	3		3	2	2	G	3	3	1.5
	Biphenyl (1,1-biphenyl)	92-52-4	0	0				0	1	1	2	✓			3	2	2	2	2	✓			3	3		3	4.0	3	1.5	1		1	1	0.33	S		3	0.9
	Nickel and compounds (not carbony	7440-02-0	1	1				1	1.33	1.17					0	2	3	1	2				2	1		1	2.2	3	3	3		3	2	2	G	2	2	1.7
	Formaldehyde (methyl aldehyde)	50-00-0	1	0				0	1	1.5	3		✓		2	1	0	0	0.33				0.33	1.17		1.17	2.7	4	2	3	2	2	1	0.67	S		3	1.3
	Carbon disulphide	75-15-0	0	2			✓	1	1.33	1.67	1				1	1	1	1	1				1	1		1	2.7	4	2	3	2	2	1	0.67	S		3	1.3

				Reproduction					Chronic		Acute Environmental					Chronic Environmental								2nd	Envir	Total	PAN	Point	Market Output					Bioavailability			EXP
prefix	Substance Name	CAS No		Dflt	EC				Health	Health	Dflt	EC			Tot	Default				EC				Tot	Ord	Tot	Hazard	Releases		Dflt	Ind	Tot	Disper	Diff	S/G	Gen	Tot	Tot
			Tot		1	2	3	Tot	Total	Total		Vtox	Tox	Harm		Chr	Pers	Bioac	Tot	53	58	59	Tot	Env	Eff													
																																			Spec	Gen		
	Count		391	147	4	5	5	391	391	391	373	142	67	45	391	385	159	159	391	226	2	5	391	391	3	391	391	146	391	384	106	391	391	391	350	41	391	391
	Acetonitrile	75-05-8	0	1				1	1.33	1.67	1				1	1	1	1	1				1	1		1	2.7	4	2	2		2	1	0.67	S		3	1.3
	Acetaldehyde	75-07-0	1	1				1	1.33	1.17	2				2	1	2	1	1.33				1.33	1.67		1.67	2.8	3	1.5	3	3	3	1	1	S		3	1.3
	Methylenebis (phenylisocyanate)	101-68-8	0	0				0	0.67	0.83	2				2	2	2	2	2				2	2		2	2.8	3	1.5	3		3	1	1	S		3	1.3
	Chromium (III) compounds	7440-47-3	0	2				2	1.33	1.17	2				2	2	3	1	2				2	2		2	3.2		2	2	2	2	2	1.33	G	2	2	1.1
1,1,2-	Trichloroethane	79-00-5	1	1				1	1.33	1.17	1				1	1	2	1	1.33				1.33	1.17		1.17	2.3	4	2	1	1	1	3	1	S		3	1.5
	Ethyl acetate	141-78-6	0	0				0	0.33	0.67	1				1	1	1	1	1				1	1		1	1.7	2	1	3	3	3	3	3	S		3	2.0
	Acrylonitrile (2-propenenitrile)	107-13-1	2	0				0	1.33	1.67	1				1	1	1	1	1				1	1		1	2.7	3	1.5	3	3	3	1	1	S		3	1.3
	Cyclohexane	110-82-7	0	0				0	0.33	0.67	2				2	1	1	1	1				1	1.5		1.5	2.2	4	2	2	3	3	1	1	S		3	1.5
	Vinyl chloride monomer	75-01-4	3	1				1	2.33	2.17	1				1	1	1	1	1				1	1		1	3.2	4	2	3	3	3	0	0	S		3	1.0
	Chloroform (trichloromethane)	67-66-3	1	2				2	2	1.5	1				1	1	1	1	1				1	1		1	2.5	3	1.5	2	1	1	3	1	S		3	1.3
2-	Ethylhexyl phthalate (DEHP)	117-81-7	1	2				2	1.67	1.33	2				2	1	0	0	0.33				0.33	1.17		1.17	2.5	3	1.5	3		3	1	1	S		3	1.3
	Dibutyl phthalate	84-74-2	0	1				1	0.67	0.83	2				2	2	1	1	1.33				1.33	1.67		1.67	2.5	3	1.5	3		3	1	1	S		3	1.3
	Aniline (benzenamine)	62-53-3	1	2				2	2	2	1	✓			3	1	2	1	1.33				1.33	2.17		2.17	4.2	3	1.5	3	1	1	0	0	S		3	0.8
	Cumene (1-methylethylbenzene)	98-82-8	1	1				1	1.33	1.17	1				1	1	1	1	1				1	1		1	2.2	3	1.5	2	2	2	2	1.33	S		3	1.4
	Chloroethane (ethyl chloride)	75-00-3	1	0				0	1	2	3			✓	1	2	1	1	1.33	✓			3	2		2	4.0	3	1.5	0	1	1	0	0	S		3	0.8
	Organo-tin compounds ++	N/A	0	2				2	1.33	1.17	1				1	3	2	3	2.67				2.67	1.83		1.83	3.0	2	1	3		3	1	1	G	3	3	1.0
2-	Methoxyethanol	109-86-4	0	2		✓		2	1.33	1.17	0				0	0			0				0	0		0	1.2	4	2	2	3	3	3	3	S		3	2.5
2-	Methoxyethanol acetate	110-49-6	0	2		✓		2	1.33	1.17	0				0	0			0				0	0		0	1.2	4	2	2	3	3	3	3	S		3	2.5
	Manganese and compounds	7439-96-5	0	2				2	1.67	1.33	1				1	2	2	1	1.67				1.67	1.33		1.33	2.7	6	3	3	2	2	2	1.33	G	1.5	1.5	1.1
	Beryllium and compounds	7440-41-7	2	0				0	1.67	2.33	1				1	2	3	2	2.33				2.33	1.67		1.67	4.0	3	1.5	2		2	1	0.67	G	2	2	0.7
1,2-	Dichloroethane	107-06-2	2	0				0	1.33	1.17	2				2	2	1	1	1.33				1.33	1.67		1.67	2.8	4	2	0	2	2	0	0	S		3	1.0
	Benzene hexachloro- (HCB) +	608-73-1	1					0	0.33	1.17	3	✓			3	3			1	✓			3	3		3	4.2		1	1	1	1	1	0.33	S		3	0.7
	Chlorophenols (di, tri, tetra) ++	N/A	1	1				1	1.33	1.67	3				3	3	1	2	2				2	2.5		2.5	4.2	2	1	1		1	1	0.33	G	3	3	0.7
	Acrylamide	79-06-1	2	1				1	2	2	2				2	1	2	1	1.33				1.33	1.67		1.67	3.7	3	1.5	2	1	1	0	0	S		3	0.8
	Acetic acid (ethanoic acid)	64-19-7	0	0				0	0.33	1.67	1				1	1	1	1	1				1	1		1	2.7	2	1	3	3	3	1	1	S		3	1.0
	Ethyl butyl ketone	106-35-4	0	0				0	0.33	0.67	2				2	2	3	1	2				2	2		2	2.7	2	1	2	3	3	1	1	S		3	1.0
	Polychlorinated dioxins and furans	N/A	3	2				2	2.67	2.83	1				1	1	0	0	0.33				0.33	0.67		0.67	3.5	1	0.5	1		1	3	1	G	3	3	0.8
	Antimony and compounds	7440-36-0	1	1				1	1	1	1				1	1	2	2	1.67				1.67	1.33		1.33	2.3	4	2	3	2	2	2	1.33	G	2	2	1.1
	Selenium and compounds	7782-49-2	1	1				1	1.33	1.67	1				1	2	3	3	2.67				2.67	1.83		1.83	3.5	3	1.5	2		2	1	0.67	G	2	2	0.7
1,1,2,2-	Tetrachloroethane	79-34-5	1	2				2	2	2.5	1		✓		2	1	0	0	0.33	✓			3	2.5		2.5	5.0	2	1	0		0	0	0	S		3	0.5
	Ethylbenzene	100-41-4	0	1				1	1	1	1				1	1	0	0	0.33				0.33	0.67		0.67	1.7	4	2	3		3	1	1	S		3	1.5
	Ethanol	64-17-5	2	1				1	1.33	1.17	2				2	1	1	0	0.67				0.67	1.33		1.33	2.5	2	1	3	3	3	1	1	S		3	1.0
n-	Hexane	110-54-3	0	2				2	1.67	1.33	3				3	1	0	0	0.33				0.33	1.67		1.67	3.0	2	1	3	2	2	1	0.67	S		3	0.8
	Triethylamine	121-44-8	0	0				0	0.67	1.83	2				2	2	1	2	1.67				1.67	1.83		1.83	3.7	2	1	1		1	1	0.33	S		3	0.7
	Hydrogen cyanide	74-90-8	0	0				0	1	2	1				1	1	0	0	0.33				0.33	0.67		0.67	2.7	3	1.5	1		1	1	0.33	S		3	0.9
	Creosote	8001-58-9	2	0				0	1	1	1				1	1	0	0	0.33				0.33	0.67		0.67	1.7	3	1.5	3	2	2	2	1.33	S		3	1.4
	Methyl mercaptan	74-93-1	1	1				1	1	1	1				1	2	3	3	2.67				2.67	1.83		1.83	2.8	2	1	1	2	2	1	0.67	S		3	0.8
	Aldrin +	309-00-2	1					0	1.33	1.67	3	✓			3	3	1	1	1.67	✓			3	3		3	4.7		0	3		3	1	1	S		3	0.5
	Phosgene	75-44-5	0	0				0	1	2	2				2	2	2	2	2				2	2		2	4.0	1	0.5	2	1	1	2	0.67	S		3	0.6
	Methyl tert-butyl ether	1634-04-4	0	1				1	0.67	1.33	1				1	1	3	0	1.33				1.33	1.17		1.17	2.5	3	1.5	1		1	1	0.33	S		3	0.9
	Heptachlor #	76-44-8	1					0	1	1.5	3	✓			3	3	3	3	3	✓			3	3		3	4.5		0	1		1	3	1	S		3	0.5
	Asbestos ^	1332-21-4	3	0				0	2	2	1				1	1	1	1	1				1	1		1	3.0	3	1.5	3	0	0	1	0	S		3	0.8
	Aluminium (fume and dust)	7429-90-5	0	0				0	0.67	0.83	1				1	2	3	2	2.33				2.33	1.67		1.67	2.5	4	2	3	1	1	2	0.67	G	2	2	0.9
	Barium and compounds	7440-39-3	0	0				0	0.33	0.67	1				1	1	3	1	1.67				1.67	1.33		1.33	2.0	4	2	2		2	2	1.33	G	2	2	1.1
1,1,1,2-	Tetrachloroethane	630-20-6	1	1				1	1.33	1.17	1				1	1	1	1	1				1	1		1	2.2	2	1	3		3	1	1	S		3	1.0
	Epichlorohydrin (chloromethylox)	106-89-8	2	1				1	1.67	1.83	1				1	1	1	1	1				1	1		1	2.8	3	1.5	3	2	2	0	0	S		3	0.8
	Benzoyl chloride	98-88-4	1	0				0	1	1.5	1				1	2	2	1	1.67				1.67	1.33		1.33	2.8	3	1.5	0	1	1	0	0	S		3	0.8
	Toluene-2,6-diisocyanate	91-08-7	1	1				1	1.33	1.67	1				1	1	1	0	0.67				0.67	0.83		0.83	2.5	2	1	2		2	1	0.67	S		3	0.8
n-	Propanol	71-23-8	0	0				0	0.33	0.67	3				3	2	0	0	0.67				0.67	1.83		1.83	2.5	2	1	2		2	1	0.67	S		3	0.8
	Chlorpyrifos	2921-88-2	0					0	0	1	3	✓			3	3			1	✓			3	3		3	4.0		0	3		3	1	1	S		3	0.5
	Methyl bromide ^	74-83-9	0					0	0	1	3	✓			3	3			1	✓		✓	3	3		3	4.0		0	1		1	3	1	S		3	0.5
	Acetylene (ethyne)	74-86-2	0	0				0	0.33	0.67	1				1	3	2	0	1.67				1.67	1.33		1.33	2.0	2	1	3	3	3	1	1	S		3	1.0
n-	Pentane	109-66-0	0	0				0	0.33	0.67	2				2	2	0	0	0.67				0.67	1.33		1.33	2.0	2	1	3	3	3	1	1	S		3	1.0
	Propylene oxide (methyloxirane)	75-56-9	2	1				1	1.67	1.33	1				1	1	2	2	1.67				1.67	1.33		1.33	2.7	3	1.5	1	2	2	0	0	S		3	0.8
	Crotonaldehyde (2-butenal)	4170-30-3	0	0				0	0.67	1.33	3				3	2	3	2	2.33				2.33	2.67		2.67	4.0	2	1	0		0	0	0	S		3	0.5
	Vinylidene chloride	75-35-4	1	1				1	1.33	1.17	2				2	1	1	1	1				1	1.5		1.5	2.7	3	1.5	0	1	1	0	0	S		3	0.8

				Reproduction					Chronic		Acute Environmental					Chronic Environmental									2nd	Envir	Total	PAN	Point	Market Output				Bioavailability			EXP
prefix	Substance Name	CAS No		Dflt	EC				Health	Health	Dflt	EC			Tot	Default				EC				Tot	Ord	Tot	Hazard	Releases		Dflt	Ind	Tot	Disper	Diff	S/G	Gen	Tot	Tot
			Tot		1	2	3	Tot	Total	Total		Vtox	Tox	Harm		Chr	Pers	Bioac	Tot	53	58	59	Tot	Env	Eff										Spec	Gen		
	Count		391	147	4	5	5	391	391	391	373	142	67	45	391	385	159	159	391	226	2	5	391	391	3	391	391	146	391	384	106	391	391	391	350	41	391	391
1,4-	Dioxane	123-91-1	1	0				0	1	1	1				1	1	1	0	0.67				0.67	0.83		0.83	1.8	3	1.5	1		1	2	0.67	S		3	1.1
o-	Toluidine	95-53-4	2	0				0	1.67	1.83	2	✓			3	2	1	0	1				1	2		2	3.8	2	1	0		0	0	0	S		3	0.5
	Acetone cyanohydrin	75-86-5	0					0	0	1.5	3	✓			3	3	1	1	1.67				1.67	2.33		2.33	3.8		1	0	1	1	0	0	S		3	0.5
	Tribromomethane (bromoform)	75-25-2	0	0				0	0.67	1.33	3		✓		2	2	1	1	1.33	✓			3	2.5		2.5	3.8	2	1	0		0	1	0	S		3	0.5
	Picric acid (2,4,6-trinitrophenol)	88-89-1	2	0				0	1.67	1.83	1				1	1	1	1	1				1	1		1	2.8	2	1	1	1	1	1	0.33	S		3	0.7
1,2-	Diphenylhydrazine	122-66-7	2	0				0	1.33	1.17	3				3	2	2	2	2				2	2.5		2.5	3.7	2	1	0		0	0	0	S		3	0.5
	Molybdenum trioxide	1313-27-5	1	0				0	1.33	1.17	3				3	2	2	2	2				2	2.5		2.5	3.7	2	1	0		0	0	0	S		3	0.5
n-	Butyl alcohol	71-36-3	0	0				0	0.33	0.67	1				1	1	0	0	0.33				0.33	0.67		0.67	1.3	4	2	1	2	2	1	0.67	G	3	3	1.3
	Fenitrothion	122-14-5	0					0	0	0.5	3	✓			3	3			1	✓			3	3		3	3.5		0	3		3	1	1	S		3	0.5
S-	Bioallethrin	28434-00-6	0					0	0	0.5	3	✓			3	3			1	✓			3	3		3	3.5		0	3		3	1	1	S		3	0.5
	Maleic anhydride	108-31-6	0	0				0	0.67	0.83	2				2	2	1	0	1				1	1.5		1.5	2.3	3	1.5	0	1	1	0	0	S		3	0.8
	Ethyl acrylate (2-propenoic acid)	140-88-5	0	0				0	0.67	0.83	1				1	1	3	2	2				2	1.5		1.5	2.3	3	1.5	0	3	3	0	0	S		3	0.8
	Dieldrin +	60-57-1	1					0	1.33	2.17	3	✓			3	3			1	✓			3	3		3	5.2		0	1		1	2	0.67	S		3	0.3
	Thiourea	62-56-6	1	2				2	2	1.5	1		✓		2	1	0	0	0.33	✓			3	2.5		2.5	4.0	1	0.5	1	1	1	1	0.33	S		3	0.4
2,4-	Dinitrotoluene	121-14-2	1	0				0	1	1.5	3				3	3	1	2	2				2	2.5		2.5	4.0	1	0.5	1		1	1	0.33	S		3	0.4
2-	Butoxyethanol	111-76-2	0	0				0	0.67	0.83	0				0	0			0				0	0		0	0.8	4	2	3	3	3	2	2	S		3	2.0
	Diacetone alcohol	123-42-2	0	0				0	0.67	0.83	1				1	1	1	0	0.67				0.67	0.83		0.83	1.7	2	1	3		3	1	1	S		3	1.0
	Methamidophos	10265-92-6	0					0	0	1.5	3	✓			3	2			0.67				0.67	1.83		1.83	3.3		0	3		3	1	1	S		3	0.5
	Hexachlorobutadiene	87-68-3	1	1				1	1.33	1.17	3				3	2	1	1	1.33				1.33	2.17		2.17	3.3	2	1	0		0	0	0	S		3	0.5
	Phthalic anhydride	85-44-9	0	1				1	1	1	1				1	1	2	1	1.33				1.33	1.17		1.17	2.2	3	1.5	0	3	3	0	0	S		3	0.8
	Diethylamine	109-89-7	1	0				0	0.67	1.83	1				1	2	2	1	1.67				1.67	1.33		1.33	3.2	2	1	0	3	3	0	0	S		3	0.5
	Chloromethane (methyl chloride)	74-87-3	1	2				2	2	2	1				1	2	1	1	1.33				1.33	1.17		1.17	3.2	3	0	0	1	1	3	1	S		3	0.5
	Phosphamidon	13171-21-6	1					0	0.33	1.67	3	✓			3	3			1	✓			3	3		3	4.7		0	2		2	1	0.67	S		3	0.3
2,6-	Dinitrotoluene	606-20-2	1	0				0	1.33	2.17	1				1	2	3	1	2				2	1.5		1.5	3.7	1	0.5	1		1	1	0.33	S		3	0.4
	Pyridine	110-86-1	0	0				0	1	1	1				1	1	0	0	0.33				0.33	0.67		0.67	1.7	3	1.5	1		1	1	0.33	S		3	0.9
	Cyclohexanone	108-94-1	0	0				0	0.33	0.67	1				1	1	1	0	0.67				0.67	0.83		0.83	1.5	2	1	3	1	1	3	1	S		3	1.0
	Coumaphos	56-72-4	0					0	0	1.5	3	✓			3	3			1	✓			3	3		3	4.5		0	2		2	1	0.67	S		3	0.3
	Monocrotophos	6923-22-4	0					0	0	1.5	3	✓			3	3			1	✓			3	3		3	4.5		0	2		2	1	0.67	S		3	0.3
	Fensulfothlan	115-90-2	0					0	0	1.5	3	✓			3	3			1	✓			3	3		3	4.5		0	2		2	1	0.67	S		3	0.3
	Disulfoton	298-04-4	0					0	0	1.5	3	✓			3	3			1	✓			3	3		3	4.5		0	2		2	1	0.67	S		3	0.3
	Methidathion	950-37-8	0					0	0	1.5	3	✓			3	3			1	✓			3	3		3	4.5		0	2		2	1	0.67	S		3	0.3
1,2-	Dichloro-(E)-ethene	156-60-5	1	0				0	1	1	2			✓	1	2	1	2	1.67	✓			3	2		2	3.0	2	1	0		0	0	0	S		3	0.5
	Hexachloroethane	67-72-1	1	1				1	1.33	1.17	1				1	1	1	0	0.67				0.67	0.83		0.83	2.0	3	1.5	0		0	0	0	S		3	0.8
1,2,4-	Trimethylbenzene	25551-13-7	0	0				0	0.67	0.83	2				2	2	0	0	0.67				0.67	1.33		1.33	2.2	4	1	2	1	1	1	0.33	S		3	0.7
	Methyl amine (methanamine)	74-89-5	1	1				1	1.33	1.17	2				2	2	1	1	1.33				1.33	1.67		1.67	2.8	2	1	0		0	0	0	S		3	0.5
	Cyclohexanol	108-93-0	0	0				0	0.33	0.67	1				1	1	1	1	1				1	1		1	1.7	2	1	2	2	2	1	0.67	S		3	0.8
	Methyl acrylate	96-33-3	0	0				0	1	1	1				1	1	1	0	0.67				0.67	0.83		0.83	1.8	3	1.5	0	3	3	0	0	S		3	0.8
	Pirimiphos-ethyl	23505-41-1	0					0	0	1	3	✓			3	3			1	✓			3	3		3	4.0		0	2		2	1	0.67	S		3	0.3
	Oxydemeton-methyl	301-12-2	0					0	0	1	3	✓			3	0			0		✓		3	3		3	4.0		0	2		2	1	0.67	S		3	0.3
	Leptophos	21609-90-5	0					0	0	1	3	✓			3	3			1	✓			3	3		3	4.0		0	2		2	1	0.67	S		3	0.3
	Ethanolamine	141-43-5	0	0				0	0.33	0.67	1				1	1	0	0	0.33				0.33	0.67		0.67	1.3	2	1	2	3	3	1	1	S		3	1.0
	Dimethylamine (methanamine)	124-40-3	0	0				0	0.33	0.67	2				2	2	2	2	2				2	2		2	2.7	2	1	0	3	3	0	0	S		3	0.5
	Hydroxylamine sulphate (1:1)	10046-00-1	0					0	1	1	2	✓			3	3	3	2	2.67				2.67	2.83		2.83	3.8		0	2		2	1	0.67	S		3	0.3
	Isophorone	78-59-1	1	0				0	0.67	0.83	1				1	2	2	3	2.33				2.33	1.67		1.67	2.5	2	1	0		0	0	0	S		3	0.5
	Methyl propyl ketone (MPK)	107-87-9	0	0				0	0.33	0.67	1				1	2	1	1	1.33				1.33	1.17		1.17	1.8	2	1	1		1	1	0.33	S		3	0.7
	Diazinon	333-41-5	0					0	0	0.5	3	✓			3	3			1	✓			3	3		3	3.5		0	2	2	2	1	0.67	S		3	0.3
	Dichlofenthion	97-17-6	0					0	0	0.5	3	✓			3	3			1	✓			3	3		3	3.5		0	2		2	1	0.67	S		3	0.3
	Demeton	8065-48-3	0					0	0	1.5	3	✓			3	2			0.67				0.67	1.83		1.83	3.3		0	2		2	1	0.67	S		3	0.3
3,3-	Dichlorobenzidine	91-94-1	2	1				1	1.67	1.33	2	✓			3	2	3	1	2	✓			3	3		3	4.3	1	0.5	0		0	0	0	S		3	0.3
	Bromochloromethane	74-97-5	1	0				0	1	1	1				1	2	1	1	1.33				1.33	1.17		1.17	2.2	2	1	0		0	0	0	S		3	0.5
bis-(2-	Chloro-1-methylethyl) ether	108-60-1	3	1				1	1.67	1.83	2				2	2	3	3	2.67				2.67	2.33		2.33	4.2	1	0.5	0		0	0	0	S		3	0.3
	Demeton-O	298-03-3	0					0	0	1.5	3	✓			3	0			0				0	1.5		1.5	3.0		0	2		2	1	0.67	S		3	0.3
	Hydroxylamine hydrochloride	5470-11-1	0					0	1	1.5	3	✓			3	0			0				0	1.5		1.5	3.0		0	2		2	1	0.67	S		3	0.3
	Tetraethyl pyrophosphate (TEPP)	107-49-3	0					0	0	1.5	3	✓			3	0			0				0	1.5		1.5	3.0		0	2		2	1	0.67	S		3	0.3
	Titanium tetrachloride	7550-45-0	0	0				0	0.67	1.33	1				1	1	0	0	0.33				0.33	0.67		0.67	2.0	2	1	0		0	0	0	S		3	0.5
	Benzidine	29398-96-7	3	0				0	1.67	1.33	3				3	2	3	2	2.33				2.33	2.67		2.67	4.0	1	0.5	0		0	0	0	S		3	0.3

				Reproduction					Chronic		Acute Environmental					Chronic Environmental								2nd	Envir	Total	PAN	Point	Market Output					Bioavailability			EXP
prefix	Substance Name	CAS No		Dflt	EC				Health	Health	Dflt	EC			Tot	Default				EC				Tot	Ord	Tot	Hazard	Releases		Dflt	Ind	Tot	Disper	Diff	S/G	Gen	Tot	Tot
			Tot		1	2	3	Tot	Total	Total		Vtox	Tox	Harm		Chr	Pers	Bioac	Tot	53	58	59	Tot	Env	Eff										Spec	Gen		
	Count		391	147	4	5	5	391	391	391	373	142	67	45	391	385	159	159	391	226	2	5	391	391	3	391	391	146	391	384	106	391	391	391	350	41	391	391
	Chloromethyl methyl ether	107-30-2	3	1				1	1.67	1.33	3				3	3	2	2	2.33				2.33	2.67		2.67	4.0	1	0.5	0		0	0	0	S		3	0.3
	Vinyl toluene	25013-15-4	0	0				0	0.67	0.83	1				1	2	1	1	1.33				1.33	1.17		1.17	2.0	2	1	0		0	0	0	S		3	0.5
	Aluminium oxide (fibrous form)	1344-28-1	1	0				0	1	1	1				1	1	2	2	1.67				1.67	1.33		1.33	2.3	3	0.5	1		1	1	0.33	S		3	0.4
	Chlorobenzenes (di, tri, tetra) ++	N/A	1	2				2	1.67	1.33					0	3			1				1	0.5		0.5	1.8	2	1	1	0	0	1	0	G	3	3	0.5
	Omethoate	1113-02-6	0					0	0	1	3	✓			3	0			0				0	1.5		1.5	2.5		0	2		2	1	0.67	S		3	0.3
	Arsine	7784-42-1	0					0	1	2	3	✓			3	3			1	✓			3	3		3	5.0		0	1		1	1	0.33	S		3	0.2
	Triphenyltin acetate	900-95-8	0					0	0.67	1.83		✓			3				0	✓			3	3		3	4.8		0	1		1	1	0.33	S		3	0.2
	EPN	2104-64-5	0					0	0	1.5	3	✓			3	3			1	✓			3	3		3	4.5		0	1		1	1	0.33	S		3	0.2
	Dicrotophos	141-66-2	0					0	0	1.5	3	✓			3	3			1	✓		✓	3	3		3	4.5		0	1		1	1	0.33	S		3	0.2
	Parathion	56-38-2	0					0	0	1.5	3	✓			3	3			1	✓			3	3		3	4.5		0	1		1	1	0.33	S		3	0.2
	Chlorfenvinphos	470-90-6	0					0	0	1.5	3	✓			3	3			1	✓			3	3		3	4.5		0	1		1	1	0.33	S		3	0.2
	Nitrobenzene	98-95-3	1	1			✓	1	1.67	1.83	1		✓		2	1	1	1	1	✓			3	2.5		2.5	4.3	3	0	1	1	1	1	0.33	S		3	0.2
	Dinoseb	88-85-7	0			✓	✓	2	0.67	1.33	3	✓			3	3			1	✓			3	3		3	4.3		0	1		1	1	0.33	S		3	0.2
	Amines, polyethylenepoly-	68131-73-7	0					0	0.67	1.33	3	✓			3	3	2	2	2.33	✓			3	3		3	4.3		0	1		1	1	0.33	G	3	3	0.2
m-	Phenylenediamine	108-45-2	0					0	0.67	1.33	3	✓			3	3			1	✓			3	3		3	4.3		0	1		1	1	0.33	S		3	0.2
p-	Diaminobenzene	106-50-3	0					0	0.67	1.33	3	✓			3	3			1	✓			3	3		3	4.3		0	1		1	1	0.33	S		3	0.2
	Butyl mercaptan	54812-86-1	0	0				0	0.33	1.17	0				0	1			0.33				0.33	0.17		0.17	1.3	2	1	0	2	2	0	0	S		3	0.5
	Phosalone	2310-17-0	0					0	0	1	3	✓			3	3			1	✓			3	3		3	4.0		0	1		1	1	0.33	S		3	0.2
	Carbophenothion	786-19-6	0					0	0	1	3	✓			3	3			1	✓			3	3		3	4.0		0	1		1	1	0.33	S		3	0.2
	Bromophos-ethyl	4824-78-6	0					0	0	1	3	✓			3	3			1	✓			3	3		3	4.0		0	1		1	1	0.33	S		3	0.2
	Silver and compounds	7440-22-4	0	0				0	1	1					0	1			0.33				0.33	0.17		0.17	1.2	2	1	2		2	1	0.67	G	2	2	0.6
	Tetraethylenepentamine	112-57-2	0					0	0.67	1.33	2		✓		2	3			1	✓			3	2.5		2.5	3.8		0	1		1	1	0.33	S		3	0.2
	Phenylhydrazine	100-63-0	0					0	0	1	3	✓			3	3	3	2	2.67				2.67	2.83		2.83	3.8		0	1		1	1	0.33	S		3	0.2
	Amitrole	61-82-5	1					0	1.33	1.17	2		✓		2	3			1	✓			3	2.5		2.5	3.7		0	1		1	1	0.33	S		3	0.2
	Thallium and compounds	7440-28-0	0	1				1	1	2					0	2			0.67				0.67	0.33		0.33	2.3	1	0.5	0		0	0	0	G	3	3	0.3
	Crufomate	299-86-5	0					0	0	0.5	3	✓			3	3			1	✓			3	3		3	3.5		0	1		1	1	0.33	S		3	0.2
2,4-	Dichlorophenol	120-83-2	0					0	0	1	2		✓		2	3			1	✓			3	2.5		2.5	3.5		0	1		1	1	0.33	S		3	0.2
	Demeton-S-methyl	919-86-8	0					0	0	1	2		✓		2	3			1	✓			3	2.5		2.5	3.5		0	1		1	1	0.33	S		3	0.2
2,4,5-	Trichlorophenol	95-95-4	0					0	0	0.5	3	✓			3	3			1	✓			3	3		3	3.5		0	1		1	1	0.33	S		3	0.2
	Diethylene diamine	110-85-0	0					0	0.67	1.33	1			✓	1	3			1	✓			3	2		2	3.3		0	1		1	1	0.33	S		3	0.2
	Triethylenetetramine	112-24-3	0					0	0.67	1.33	1			✓	1	3			1	✓			3	2		2	3.3		0	1		1	1	0.33	S		3	0.2
	Cycloexyldimethoxymethylsilane	17865-32-6	0					0	0	0.5	2		✓		2	3			1	✓			3	2.5		2.5	3.0		0	1	1	1	1	0.33	S		3	0.2
m-	Diaminobenzene	108-42-2	0					0	0	0	3	✓			3	3			1	✓			3	3		3	3.0		0	1		1	1	0.33	S		3	0.2
Bis(	Hydroxylammonium) sulphate	10039-54-0	0					0	1	1	3	✓			3	0			0				0	1.5		1.5	2.5		0	1		1	1	0.33	S		3	0.2
1,1,1-	Trichloroethane	71-55-6	0					0	0	0.5					0	2			0.67			✓	0.67	0.33		0.33	0.8		0	3	1	1	3	1	S		3	0.5
rt-pentyl-2-	Benzothiazolesulfenamide	110799-28-6	0					0	0.67	0.33	1			✓	1	3			1	✓			3	2		2	2.3		0	1		1	1	0.33	S		3	0.2
	Resorcinol	108-46-3	0					0	0	0.5	3	✓			3	0			0				0	1.5		1.5	2.0		0	1	1	1	1	0.33	S		3	0.2
(3,5-di-tert-	Butylsalicilato-O1,O2)zinc	42405-40-3	0					0	0	0.5					0	3			1	✓			3	1.5		1.5	2.0		0	1		1	1	0.33	S		3	0.2
	Dimethylnitrosamine	62-75-9	2					0	1.67	2.33	2		✓		2	3			1	✓			3	2.5		2.5	4.8		0	0		0	0	0	S		3	0.0
	Ethyleneimine	151-56-4	2					0	0.67	1.83	2		✓		2	3			1	✓			3	2.5		2.5	4.3		0	0		0	0	0	S		3	0.0
	Hexanitrodiphenylamine	131-73-7	0					0	0.67	1.83	2		✓		2	3			1	✓			3	2.5		2.5	4.3		0	0		0	0	0	S		3	0.0
	Dinitrobenzene (mixed isomers)	25154-54-5	0					0	0.67	1.83	3	✓			3	3			1	✓			3	3		3	4.8		0	0		0	0	0	G	3	3	0.0
4-	Methoxy-2-nitroaniline	96-96-8	0					0	0.67	1.83	1			✓	1	3			1	✓			3	2		2	3.8		0	0		0	0	0	S		3	0.0
2-	Butylamine	13952-84-6	0					0	0	1.5	3	✓			3	1			0.33				0.33	1.67		1.67	3.2		0	0	0	0	0	0	S		3	0.0
	Hexanitrodiphenylamine	2844-92-0	0					0	0	1.5	2		✓		2	3			1	✓			3	2.5		2.5	4.0		0	0		0	0	0	S		3	0.0
	Phosacetim	4104-14-7	0					0	0	1.5	3	✓			3	3			1	✓			3	3		3	4.5		0	0		0	0	0	S		3	0.0
	Fanofos	944-22-9	0					0	0	1.5	3	✓			3	3			1	✓			3	3		3	4.5		0	0		0	0	0	S		3	0.0
	Dialifos	10311-84-9	0					0	0	1.5	3	✓			3	3			1	✓			3	3		3	4.5		0	0		0	0	0	S		3	0.0
	Endrin +	72-20-8	0					0	0	1.5	3	✓			3	3			1	✓			3	3		3	4.5		0	0		0	0	0	S		3	0.0
	Hexachlorocyclopentadiene	77-47-4	0					0	0	1.5	3	✓			3	3			1	✓			3	3		3	4.5		0	0		0	0	0	S		3	0.0
	Hexachlorobenzene +	118-74-1	2					0	1.67	1.83	3	✓			3	3			1	✓			3	3		3	4.8		0	0		0	0	0	S		3	0.0
	Dichlorodiphenyltrichloroethane (DD	50-29-3	1					0	1.33	1.67	3	✓			3	3			1	✓			3	3		3	4.7		0	0		0	0	0	S		3	0.0
o-	Ethylhydroxylamine	624-86-2	0					0	1	1.5	3	✓			3	0			0				0	1.5		1.5	3.0		0	0		0	0	0	S		3	0.0
1,3-	Dichloropropene	542-75-6	0					0	0.67	1.33	3	✓			3	3			1	✓			3	3		3	4.3		0	0		0	0	0	S		3	0.0
2-	Methyl-4-phenylpentanol	92585-24-5	0					0	0.67	1.33	2		✓		2	3			1	✓			3	2.5		2.5	3.8		0	0		0	0	0	S		3	0.0
	Heptachlor epoxide +	1024-57-3	1					0	1	1.5	3	✓			3	3			1	✓			3	3		3	4.5		0	0		0	0	0	S		3	0.0

				Reproduction					Chronic		Acute Environmental					Chronic Environmental								2nd	Envir	Total	PAN	Point	Market Output					Bioavailability			EXP
prefix	Substance Name	CAS No		Dflt	EC				Health	Health	Dflt	EC				Default				EC					Ord	Tot	Hazard	Releases		Dflt	Ind	Tot	Dispers	Diff	S/G	Gen	Tot	Tot
			Tot		1	2	3	Tot	Total	Total		Vtox	Tox	Harm		Chr	Pers	Bioac	Tot	53	58	59	Tot	Env	Eff													
																																			Spec	Gen		
	Count		391	147	4	5	5	391	391	391	373	142	67	45	391	385	159	159	391	226	2	5	391	391	3	391	391	146	391	384	106	391	391	391	350	41	391	391
p-	Nitroaniline	100-00-6	0					0	0.67	1.33	1			✓	1	3			1	✓			3	2		2	3.3		0	0		0	0	0	S		3	0.0
N-	Methylaniline	100-61-8	0					0	0.67	1.33	3	✓			3	3			1	✓			3	3		3	4.3		0	0		0	0	0	S		3	0.0
3,5-	Dichloro-2,4-difluorobenzoyl fl**	101513-70-6	0					0	0.67	1.33	1			✓	1	3			1	✓			3	2		2	3.3		0	0		0	0	0	S		3	0.0
3-(Bis(2-	Ethylexyl)aminomethyl)benzoth**	105254-85-1	0					0	0.67	1.33	3	✓			3	3			1	✓			3	3		3	4.3		0	0		0	0	0	S		3	0.0
2-	Piperazin-1-ylethylamine	140-31-4	0					0	0.67	1.33	1			✓	1	3			1	✓			3	2		2	3.3		0	0		0	0	0	S		3	0.0
	Isophorone diamine	2855-13-2	0					0	0.67	1.33	1			✓	1	3			1	✓			3	2		2	3.3		0	0		0	0	0	S		3	0.0
m-	Phenylenediamine dihydrochlor**	541-69-5	0					0	0.67	1.33	3	✓			3	3			1	✓			3	3		3	4.3		0	0		0	0	0	S		3	0.0
3-	Chloro-2-methylpropene	563-47-3	0					0	0.67	1.33	2		✓		2	3			1	✓			3	2.5		2.5	3.8		0	0		0	0	0	S		3	0.0
2,5-	Diaminotoluene sulphate	615-50-9	0					0	0.67	1.33	3	✓			3	3			1	✓			3	3		3	4.3		0	0		0	0	0	S		3	0.0
N-	Methyl-p-toluidine	623-08-5	0					0	0.67	1.33	1			✓	1	3			1	✓			3	2		2	3.3		0	0		0	0	0	S		3	0.0
N,N-bis(2-	Ethylexyl)-((1,2,4-triazol-1-yl)**	91273-04-0	0					0	0.67	1.33	2		✓		2	3			1	✓			3	2.5		2.5	3.8		0	0		0	0	0	S		3	0.0
o-	Diaminobenzene	95-54-5	0					0	0.67	1.33	3	✓			3	3			1	✓			3	3		3	4.3		0	0		0	0	0	S		3	0.0
1-	Amino-3-nitrobenzene	99-09-2	0					0	0.67	1.33	1			✓	1	3	3	3	3	✓			3	2		2	3.3		0	0		0	0	0	S		3	0.0
p-	Nitrotoluene	99-99-0	0					0	0.67	1.33	2		✓		2	3			1	✓			3	2.5		2.5	3.8		0	0		0	0	0	S		3	0.0
2-	Propen-1-ol	107-18-6	0					0	0	1	3	✓			3	0			0				0	1.5		1.5	2.5		0	0		0	0	0	S		3	0.0
	Ethyl chloroacetate	105-39-5	0					0	0	1	3	✓			3	0			0				0	1.5		1.5	2.5		0	0		0	0	0	S		3	0.0
	Benzyl-2-hydroxydodecyldime**	113694-52-3	0					0	0	1	3	✓			3	3			1	✓			3	3		3	4.0		0			0	0	0	S		3	0.0
12-14-tert-	Alkylamine, methylphosphonic **	119415-07-5	0					0	0	1	2		✓		2	3	3	2	2.67	✓			3	2.5		2.5	3.5		0			0	0	0	S		3	0.0
2,6-	Dichloro-4-nitroanisole	17742-69-7	0					0	0	1	2		✓		2	3			1	✓			3	2.5		2.5	3.5		0	0		0	0	0	S		3	0.0
	Mecarbam	2595-54-2	0					0	0	1	3	✓			3	3			1	✓			3	3		3	4.0		0			0	0	0	S		3	0.0
	Chloroacetic acid	79-11-8	0					0	0	1	3	✓			3	0			0				0	1.5		1.5	2.5		0	0		0	0	0	S		3	0.0
3-(3-	Methylpent-3-yl)isoxazol-5-yla**	82560-06-3	0					0	0	1	1			✓	1	3			1	✓			3	2		2	3.0		0	0		0	0	0	S		3	0.0
3,3'-	Dichlorobenzidine, salts of	612-83-9	2					0	1.33	1.17	3	✓			3	3			1	✓			3	3		3	4.2		0	0		0	0	0	G	3	3	0.0
4,4'-	Methylenedi-o-toluidine	838-88-0	2					0	1.33	1.17	3	✓			3	3			1	✓			3	3		3	4.2		0	0		0	0	0	S		3	0.0
2-	Naphthylamine	91-59-8	3					0	1	1	2		✓		2	3			1	✓			3	2.5		2.5	3.5		0	0	2	2	0	0	S		3	0.0
S-	Benzyl N,N-dipropylthiocarbamate	52888-80-9	0					0	1	1	2		✓		2	3			1	✓			3	2.5		2.5	3.5		0	0		0	0	0	S		3	0.0
	Bromobenzylbromotoluene mix**	99688-47-8	0					0	1	1	3	✓			3	3			1	✓			3	3		3	4.0		0	0		0	0	0	S		3	0.0
2-	Naphthylamine, salts of	553-00-4	2					0	0.67	0.83	2		✓		2	3			1	✓			3	2.5		2.5	3.3		0	0	2	2	0	0	G	3	3	0.0
	Isobutyl 3,4-epoxybutyrate	100181-71-3	0					0	0.67	0.83	3	✓			3	3			1	✓			3	3		3	3.8		0	0		0	0	0	S		3	0.0
3,3'-	Dimethylbenzidine, salts of	612-82-8	2					0	0.67	0.83	2		✓		2	3			1	✓			3	2.5		2.5	3.3		0	0		0	0	0	G	3	3	0.0
6-	Methyl-2,4-bis(methylthio)phen**	106264-79-3	0					0	0.67	0.83	3	✓			3	3			1	✓			3	3		3	3.8		0	0		0	0	0	S		3	0.0
	Benzothiazole-2-thiol	149-30-4	0					0	0.67	0.83	3	✓			3	3			1	✓			3	3		3	3.8		0	0		0	0	0	S		3	0.0
4-	Chloro-3-methylphenol	59-50-7	0					0	0.67	0.83	3	✓			3	0			0				0	1.5		1.5	2.3		0	0		0	0	0	S		3	0.0
Bis(2-	Ethylexyl)dithiodiacetate	62268-47-7	0					0	0.67	0.83	2		✓		2	3			1	✓			3	2.5		2.5	3.3		0	0		0	0	0	S		3	0.0
	Mirex ##	2385-85-5	1				✓	1	0.67	0.83	3	✓			3	3			1	✓			3	3		3	3.8		0	0		0	0	0	S		3	0.0
	Chlordane #	57-74-9	1					0	0.33	0.67	3	✓			3	3			1	✓			3	3		3	3.7		0	1	0	0	3	0	S		3	0.0
1,2-	Dichloroethylene	540-59-0	0					0	0	0.5	1			✓	1	3			1	✓			3	2		2	2.5		0	0	3	3	0	0	S		3	0.0
1,1-	Dichloroethane	75-34-3	0					0	0	0.5	1			✓	1	3			1	✓			3	2		2	2.5		0	0	2	2	0	0	S		3	0.0
	Chlorobenzene	108-90-7	0					0	0	0.5	2		✓		2	3			1	✓			3	2.5		2.5	3.0		0	2	0	0	1	0	S		3	0.0
1-	Naphthylamine	134-32-7	0					0	0	0.5	2		✓		2	3			1	✓			3	2.5		2.5	3.0		0	0	2	2	0	0	S		3	0.0
	Pentachloronaphthalene	1321-64-8	0					0	0	0.5	3	✓			3	3			1	✓			3	3		3	3.5		0	0		0	0	0	S		3	0.0
	Guazatine	13516-27-3	0					0	0	0.5	3	✓			3	3			1	✓			3	3		3	3.5		0	0		0	0	0	S		3	0.0
3,5-	Dichloro-4-(1,1,2,2-tetrafluoro**	104147-32-2	0					0	0	0.5	3	✓			3	3			1	✓			3	3		3	3.5		0	0		0	0	0	S		3	0.0
p-	Chlorotoluene	106-43-4	0					0	0	0.5	2			✓	2	3			1	✓			3	2.5		2.5	3.0		0	0		0	0	0	S		3	0.0
3-	Chlorotoluene	108-41-8	0					0	0	0.5	2			✓	2	3			1	✓			3	2.5		2.5	3.0		0	0		0	0	0	S		3	0.0
	Chlorotoluene (mixed isomers)	25168-05-2	0					0	0	0.5	2			✓	2	3			1	✓			3	2.5		2.5	3.0		0	0		0	0	0	G	3	3	0.0
	Cyanophos	2636-26-2	0					0	0	0.5	3	✓			3	3			1	✓			3	3		3	3.5		0	0		0	0	0	S		3	0.0
2-(2-	Bromoethoxy)anisole	4463-59-6	0					0	0	0.5	1			✓	1	3			1	✓			3	2		2	2.5		0	0		0	0	0	S		3	0.0
3-	Aminophenol	591-27-5	0					0	0	0.5	2		✓		2	3			1	✓			3	2.5		2.5	3.0		0	0		0	0	0	S		3	0.0
	Pentachlorobenzene +	608-93-5	0					0	0	0.5	3	✓			3	3			1	✓			3	3		3	3.5		0	0		0	0	0	S		3	0.0
S-(1-	Methyl-1-phenylethyl)piperidin**	61432-55-1	0					0	0	0.5	2		✓		2	3			1	✓			3	2.5		2.5	3.0		0	0		0	0	0	S		3	0.0
2-	Methyl-1-(4-methyltiophenyl)-2**	71868-10-5	0					0	0	0.5	2		✓		2	3			1	✓			3	2.5		2.5	3.0		0	0		0	0	0	S		3	0.0
3-(2-(	Diaminomethyleneamino)thiazol**	76823-93-3	0					0	0	0.5	1			✓	1	3			1	✓			3	2		2	2.5		0	0		0	0	0	S		3	0.0
	Menazon	78-57-9	0					0	0	0.5	1			✓	1	3			1	✓			3	2		2	2.5		0			0	0	0	S		3	0.0
2-	Amino-4,6-dinitrophenol	96-91-3	0					0	0	0.5	1			✓	1	3			1	✓			3	2		2	2.5		0	0		0	0	0	S		3	0.0
kis(4,6-bis(	Butyl-(n-methyl-2,2,6,6-tetrame**	106990-43-6	0					0	0.67	0.33	2		✓		2	3			1	✓			3	2.5		2.5	2.8		0	0		0	0	0	S		3	0.0

				Reproduction					Chronic		Acute Environmental					Chronic Environmental								2nd	Envir	Total	PAN	Point	Market Output					Bioavailability			EXP
prefix	Substance Name	CAS No		Dflt	EC				Health	Health	Dflt	EC				Default				EC					Ord	Tot	Hazard	Releases		Dflt	Ind	Tot	Disper	Diff	S/G	Gen	Tot	Tot
			Tot		1	2	3	Tot	Total	Total		Vtox	Tox	Harm		Chr	Pers	Bioac	Tot	53	58	59	Tot	Env	Eff										Spec	Gen		
	Count		391	147	4	5	5	391	391	391	373	142	67	45	391	385	159	159	391	226	2	5	391	391	3	391	391	146	391	384	106	391	391	391	350	41	391	391
	Methylene dithiocyanate	6317-18-6	0					0	0.67	0.33	3	✓			3	0			0				0	1.5		1.5	1.8		0	0		0	0	0	S		3	0.0
Bis(4-	Dodecylphenyl)iodonium hexafl**	71786-70-4	0					0	0.67	0.33	1			✓	1	3			1	✓			3	2		2	2.3		0	0		0	0	0	S		3	0.0
1,5-	Naphthylenediamine	2243-62-1	1					0	0.33	0.17	3	✓			3	3			1	✓			3	3		3	3.2		0	0		0	0	0	S		3	0.0
	Diphenylamine	122-39-4	0					0	0	0	3	✓			3	3			1	✓			3	3		3	3.0		0	0		0	0	0	S		3	0.0
	Morphotion	144-41-2	0					0	0	0	3	✓			3	3			1	✓			3	3		3	3.0		0	0		0	0	0	S		3	0.0
(N-	Benzyl-N-ethyl)amino-3'-hyd…**	55845-90-4	0					0	0	0	2		✓		2	3			1	✓			3	2.5		2.5	2.5		0			0	0	0	S		3	0.0
	Methyl alpha-((4,6-dimethoxyp**	83055-99-6	0					0	0	0	2		✓		2	3			1	✓			3	2.5		2.5	2.5		0	0		0	0	0	S		3	0.0
	Disodium 1-amino-4-(4-benzen**	85153-93-1	0					0	0	0	1			✓	1	3			1	✓			3	2		2	2.0		0	0		0	0	0	S		3	0.0
	Hydroxylamine	7803-49-8	0		✓			3	2	2.5	3	✓			3	2			0.67				0.67	1.83		1.83	4.3		0	1		1	0	0	S		3	0.0
o-	Anisidine	90-04-0	3					0	1.67	2.33	2		✓		2	3			1	✓			3	2.5		2.5	4.8		0	0		0	0	0	S		3	0.0
3-	Chloropropene	107-05-1	0	2				2	0.67	1.83	3	✓			3	3			1	✓			3	3		3	4.8		0	0		0	0	0	S		3	0.0
2,4-	Dinitroaniline	97-02-9	0					0	0.67	1.83	2		✓		2	3			1	✓			3	2.5		2.5	4.3		0	0		0	0	0	S		3	0.0
	Fentin hydroxide	76-87-9	0					0	0	1.5	3	✓			3	3			1	✓			3	3		3	4.5		0	0		0	0	0	S		3	0.0
	Isodrin +	465-73-6	0					0	0	1.5	3	✓			3	3			1	✓			3	3		3	4.5		0	0		0	0	0	S		3	0.0
N-	Methyl-o-toluidine	611-21-2	0					0	0	1.5	1			✓	1	3			1	✓			3	2		2	3.5		0	0		0	0	0	S		3	0.0
	Pentachloroethane	76-01-7	1					0	1.33	1.67	2		✓		2	3			1	✓			3	2.5		2.5	4.2		0	0		0	0	0	S		3	0.0
1-	Dodecyl-2-pyrrolidone	2687-96-9	0					0	0.67	1.33	3	✓			3	3			1	✓			3	3		3	4.3		0	0		0	0	0	S		3	0.0
	Chloroaniline (mixed isomers)	27134-26-5	0					0	0.67	1.33	3	✓			3	3			1	✓			3	3		3	4.3		0	0		0	0	0	G	3	3	0.0
N-	Methyl-m-toluidine	696-44-6	0					0	0.67	1.33	1			✓	1	3			1	✓			3	2		2	3.3		0	0		0	0	0	S		3	0.0
N,N-	Diethylaniline	91-66-7	0					0	0.67	1.33	2		✓		2	3			1	✓			3	2.5		2.5	3.8		0	0		0	0	0	S		3	0.0
2-	Methyl-p-phenylenediamine	95-70-5	0					0	0.67	1.33	3	✓			3	3			1	✓			3	3		3	4.3		0	0		0	0	0	S		3	0.0
	Dicyclohexylamine	101-83-7	0					0	0	1	3	✓			3	3			1	✓			3	3		3	4.0		0	0	2	2	0	0	S		3	0.0
	Lindane +	58-89-9	0					0	0	1	3	✓			3	3			1	✓			3	3		3	4.0		0	0	0	0	0	0	S		3	0.0
1,1-	Dichloropropene	563-58-6	0					0	0	1	1			✓	1	3			1	✓			3	2		2	3.0		0	0		0	0	0	S		3	0.0
4,4-	Benzidine (Diaminobiphenyl)	92-87-5	3					0	1	1	3	✓			3	3			1	✓			3	3		3	4.0		0	0		0	0	0	S		3	0.0
N,N-	Dimethyl-2-(3-(4-chlorophenyl)**	10357-99-0	0					0	1	1	2		✓		2	3			1	✓			3	2.5		2.5	3.5		0	0		0	0	0	S		3	0.0
	Dichlofluanid	1085-98-9	0					0	0.67	0.83	3	✓			3	3			1	✓			3	3		3	3.8		0	2	0	0	1	0	S		3	0.0
1-	Methyl-3-nitro-1-nitrosoguanidin	70-25-7	2					0	0.67	0.83	2		✓		2	3			1	✓		✓	3	2.5		2.5	3.3		0	0		0	0	0	S		3	0.0
3,3-	Dimethylbenzidine	119-93-7	2					0	0.67	0.83	2		✓		2	3			1	✓			3	2.5		2.5	3.3		0	0		0	0	0	S		3	0.0
2,4-di-tert-	Butylcyclohexanone	13019-04-0	0					0	0	0.5	2		✓		2	3			1	✓			3	2.5		2.5	3.0		0	0		0	0	0	S		3	0.0
2-	Bromo-2-nitropropane-1,3-diol	52-51-7	0					0	0	0.5	3	✓			3	3			1	✓			3	3		3	3.5		0	0		0	0	0	S		3	0.0
	Dicyclopentadiene	77-73-6	0					0	0	0.5	2		✓		2	3			1	✓			3	2.5		2.5	3.0		0	0		0	0	0	S		3	0.0
	Potassium-2-hydroxycarbazol**	96566-70-0	0					0	0	0.5	1			✓	1	3			1	✓			3	2		2	2.5		0	0		0	0	0	S		3	0.0
4-	Aminophenol	123-30-8	1					0	0.33	0.67	3	✓			3	3			1	✓			3	3		3	3.7		0	0		0	0	0	S		3	0.0
	Benzyltributhylammonium 4-hy**	102561-46-6	0					0	0	0.5	2		✓		2	3			1	✓			3	2.5		2.5	3.0		0			0	0	0	S		3	0.0
2-	Chloro-4-nitroaniline	121-87-9	0					0	0	0.5	2		✓		2	3			1	✓			3	2.5		2.5	3.0		0	0		0	0	0	S		3	0.0
	Methylene dibromide	74-95-3	0					0	0	0.5	1			✓	1	3			1	✓			3	2		2	2.5		0	0		0	0	0	S		3	0.0
Exo-(+/-)-1-	Methyl-2-(2-methylbenzyloxy)-**	87818-31-3	0					0	0	0.5	2		✓		2	3			1	✓			3	2.5		2.5	3.0		0	0		0	0	0	S		3	0.0
3-(N-	Methyl-N-(4-methylamino-3-nit**	93633-79-5	0					0	0	0.5	1			✓	1	3			1	✓			3	2		2	2.5		0	0		0	0	0	S		3	0.0
o-	Chlorotoluene	95-49-8	0					0	0	0.5	2		✓		2	3			1	✓			3	2.5		2.5	3.0		0	0		0	0	0	S		3	0.0
3-	Chloro-4,5,alpha,alpha,alpha-p**	77227-99-7	0					0	0	0.5					0	0			0				0	0		0	0.5		0	0		0	0	0	S		3	0.0
2'-(2-	Cyano-4,6-dinitrophenylazo)-5**	106359-94-8	0					0	0.67	0.33	1			✓	1	3			1	✓			3	2		2	2.3		0	0		0	0	0	S		3	0.0
N-(4-(3-(4-	Cyanophenyl)ureido)-3-hydrox**	108673-51-4	0					0	0.67	0.33					0	3			1	✓			3	1.5		1.5	1.8		0	0		0	0	0	S		3	0.0
	Methyl 2-(3-nitrobenzylidene)**	39562-17-9	0					0	0.67	0.33	3	✓			3	3			1	✓			3	3		3	3.3		0	0		0	0	0	S		3	0.0
	Methyl-2-(2-nitrobenzylidene)**	39562-27-1	0					0	0.67	0.33	2		✓		2	3			1	✓			3	2.5		2.5	2.8		0	0		0	0	0	S		3	0.0
4,4'-	Oxibys(ethylenethio)diphenol	90884-29-0	0					0	0.67	0.33	2		✓		2	3			1	✓			3	2.5		2.5	2.8		0	0		0	0	0	S		3	0.0
4,4'-	Isobutylethylidenediphenol	6807-17-6	0					0	0	0	3	✓			3	3			1	✓			3	3		3	3.0		0	0		0	0	0	S		3	0.0
2(3-(	Prop-1-en-2-yl)phenyl)prop-2-**	2094-99-7	0					0	1	2	3	✓			3	3			1	✓			3	3		3	5.0		0	0		0	0	0	S		3	0.0
1,4-	Dichlorobut-2-ene	764-41-0	2					0	0.67	1.83	3	✓			3	3			1	✓			3	3		3	4.8		0	0		0	0	0	S		3	0.0
p-	Anisidine	104-94-9	0					0	0.67	1.83	3	✓			3	0			0				0	1.5		1.5	3.3		0	0		0	0	0	S		3	0.0
1,3-	Dichloro-5-ethyl-5-methylimida.**	89415-87-2	0					0	0.67	1.83	3	✓			3	0			0				0	1.5		1.5	3.3		0	0		0	0	0	S		3	0.0
	Pentachlorophenol +	87-86-5	1					0	0.33	1.67	3	✓			3	3			1	✓			3	3		3	4.7		0	3	0	0	2	0	S		3	0.0
	Mephasfolan	950-10-7	0					0	0	1.5	2		✓		2	3			1	✓			3	2.5		2.5	4.0		0	0		0	0	0	S		3	0.0
	Isobenzan	297-78-9	0					0	0	1.5	3	✓			3	0			0				0	1.5		1.5	3.0		0	0		0	0	0	S		3	0.0
1,2-	Dibromo-3-chloropropane	96-12-8	2	2	✓			3	2.67	2.33	1			✓	1	3			1	✓			3	2		2	4.3		0	0		0	0	0	S		3	0.0
N,N-	Hydrazinodiacetic acid	19247-05-3	0					0	1	1.5	1			✓	1	3			1	✓			3	2		2	3.5		0	0		0	0	0	S		3	0.0

				Reproduction					Chronic		Acute Environmental					Chronic Environmental								2nd	Envir	Total	PAN	Point	Market Output					Bioavailability			EXP
prefix	Substance Name	CAS No		Dflt	EC				Health	Health	Dflt	EC				Default				EC					Ord	Tot	Hazard	Releases		Dflt	Ind	Tot	Dispers	Diff	S/G	Gen	Tot	Tot
			Tot		1	2	3	Tot	Total	Total		Vtox	Tox	Harm		Chr	Pers	Bioac	Tot	53	58	59	Tot	Env	Eff										Spec	Gen		
	Count		391	147	4	5	5	391	391	391	373	142	67	45	391	385	159	159	391	226	2	5	391	391	3	391	391	146	391	384	106	391	391	391	350	41	391	391
Z-1,3-	Dichloropropene	10061-01-5	0					0	0.67	1.33	3	✓			3	3			1	✓			3	3		3	4.3		0	0		0	0	0	S		3	0.0
N,N-	Dimethyltoluidine	29526-93-7	0					0	0.67	1.33	1			✓	1	3			1	✓			3	2		2	3.3		0	0		0	0	0	S		3	0.0
	Pentaethylenehexamine	4067-16-7	0					0	0.67	1.33	3	✓			3	3			1	✓			3	3		3	4.3		0	0		0	0	0	S		3	0.0
p-	Phenylenediamine dihydrochlor**	624-18-0	0					0	0.67	1.33	3	✓			3	3			1	✓			3	3		3	4.3		0	0		0	0	0	S		3	0.0
	Benzyldimethylamine	103-83-3	0					0	0	1	1			✓	1	3			1	✓			3	2		2	3.0		0	0		0	0	0	S		3	0.0
	Phenkapton	2275-14-1	0					0	0	1	3	✓			3	3			1	✓			3	3		3	4.0		0	0		0	0	0	S		3	0.0
2,2'-	Dimethyl-4,4'methylenebis(cyc**	6864-37-5	0					0	0	1	2		✓		2	3			1	✓			3	2.5		2.5	3.5		0	0		0	0	0	S		3	0.0
(2-(1,3-	Dioxolan-2-yl)ethyl)triphenyl….**	86608-70-0	0					0	0.67	0.83	1			✓	1	3			1	✓			3	2		2	2.8		0	0		0	0	0	S		3	0.0
m-	Mentha-1,3(8)-diene	17092-80-7	0					0	0	0.5	2		✓		2	3			1	✓			3	2.5		2.5	3.0		0	0		0	0	0	S		3	0.0
4-	Methyl-m-phenylenediamine	95-70-8	0					0	0	0.5	3	✓			3	3			1	✓			3	3		3	3.5		0	0		0	0	0	S		3	0.0
1-	Butyl-2-methylpiridinium bromide	26576-84-1	0					0	0	0.5	1			✓	1	3			1	✓			3	2		2	2.5		0	0		0	0	0	S		3	0.0
	Methyl 3-(3-tert-butyl-4-hydrox**	6386-39-6	0					0	0	0.5	2		✓		2	3			1	✓			3	2.5		2.5	3.0		0	0		0	0	0	S		3	0.0
3-	Chloro-5-trifluoromethyl-2-pyri**	79456-26-1	0					0	0	0.5	1			✓	1	3			1	✓			3	2		2	2.5		0	0		0	0	0	S		3	0.0
	Haloxifop-(2-ethoxyethyl)	87237-48-7	0					0	0	0.5	3	✓			3	3			1	✓			3	3		3	3.5		0	0		0	0	0	S		3	0.0
amino-3((5-	Carboxymethyl-4-methyl-1,3-th**	111298-82-9	0					0	0.67	0.33	1			✓	1	3			1	✓			3	2		2	2.3		0	0		0	0	0	S		3	0.0
6-(2,3-	Dimethylmaleimido)hexyl metha**	63740-41-0	0					0	0.67	0.33	2		✓		2	3			1	✓			3	2.5		2.5	2.8		0	0		0	0	0	S		3	0.0
	Trisodium bis (2-(5-chloro-4-ni**	93952-24-0	0					0	0	0				✓	1				0	✓			3	2		2	2.0		0	0		0	0	0	S		3	0.0
1,1,2,2-	Tetrabromoethane	79-27-6	0					0	0	1.5	1			✓	1	3			1	✓			3	2		2	3.5		0	0		0	0	0	S		3	0.0
	Trichloronate	327-98-0	0					0	0	1.5	3	✓			3	3			1	✓			3	3		3	4.5		0	0		0	0	0	S		3	0.0
1,3,5-	TGIC - Tris(oxiranylmethyl)-1,3,5-t	2451-62-9	3					0	1.67	1.83	1			✓	1	3			1	✓			3	2		2	3.8		0	0		0	0	0	S		3	0.0
	Toluene-2,4-diammonium sulphat	65321-67-7	2					0	1.33	1.67	3	✓			3	3			1	✓			3	3		3	4.7		0	0		0	0	0	S		3	0.0
	Carbon tetrachloride ^	56-23-5	1					0	1.33	1.67	3			✓	1	3	3	3	3	✓		✓	3	2		2	3.7		0	0	0	0	0	0	S		3	0.0
	Tricresyl phosphate (mixed isome	78-30-8	0					0	1	1.5	2		✓		2	3			1	✓			3	2.5		2.5	4.0		0	0		0	0	0	G	3	3	0.0
p-	Toluidine	106-49-0	0					0	0.67	1.33	3	✓			3	0			0				0	1.5		1.5	2.8		0	0		0	0	0	S		3	0.0
m-	Toluidine	108-44-1	0					0	0.67	1.33	3	✓			3	0			0				0	1.5		1.5	2.8		0	0		0	0	0	S		3	0.0
Tetrakis(	Tetramethylammonium) 6-amino**	116340-05-7	0					0	0.67	1.33	1			✓	1	3			1	✓			3	2		2	3.3		0	0		0	0	0	S		3	0.0
	Sodium-5-n-butylbenzotriazole	118685-34-0	0					0	0.67	1.33	2		✓		2	3			1	✓			3	2.5		2.5	3.8		0	0		0	0	0	S		3	0.0
hexakis(	Tetramethylammonium) 4,4'-vin**	124537-30-0	0					0	0.67	1.33	1			✓	1	3			1	✓			3	2		2	3.3		0	0		0	0	0	S		3	0.0
C8-18	Alkylbis(2-hydroxyethyl)ammo**	68132-19-4	0					0	0.67	1.33	3	✓			3	3	0	0	1	✓			3	3		3	4.3		0			0	0	0	S		3	0.0
1-	Amino-2-nitrobenzene	88-74-4	0					0	0.67	1.33	3			✓	1	3	1	2	2	✓			3	2		2	3.3		0	0		0	0	0	S		3	0.0
2,3,4-	Trichlorobut-1-ene	2431-50-7	1					0	0.33	1.17	3	✓			3	3			1	✓			3	3		3	4.2		0	0		0	0	0	S		3	0.0
	Allylamine	107-11-9	0					0	0	1	3			✓	2	3	3	3	3	✓			3	2.5		2.5	3.5		0	0		0	0	0	S		3	0.0
	Vamidothion	2275-23-2	0					0	0	1		✓			3				0				0	1.5		1.5	2.5		0	0		0	0	0	S		3	0.0
	Tricresyl phosphate (mixed isome	78-32-0	0					0	0	1	2		✓		2	3			1	✓			3	2.5		2.5	3.5		0	0		0	0	0	G	3	3	0.0
4-	Amino-3-fluorophenol	399-95-1	2					0	1.33	1.17	3		✓		2	3	2	2	2.33	✓			3	2.5		2.5	3.7		0	0		0	0	0	S		3	0.0
	Tetradecylammoniumbis(1-(5-**	88377-66-6	0					0	1	1					0	3			1	✓	✓		3	1.5		1.5	2.5		0	0		0	0	0	S		3	0.0
	Benzidine, salts of	531-85-1	2					0	0.67	0.83	3	✓			3	3	3	1	2.33	✓			3	3		3	3.8		0	0		0	0	0	G	3	3	0.0
	Nitrosodipropylamine	621-64-7	2					0	0.67	0.83	3		✓		2	3	3	2	2.67	✓			3	2.5		2.5	3.3		0	0		0	0	0	S		3	0.0
2-	Methyl-m-phenylenediamine	823-40-5	1					0	1	1	3	✓			3	3	3	2	2.67	✓			3	3		3	4.0		0	0		0	0	0	S		3	0.0
	Toxaphene ##	8001-35-2	1					0	0.33	0.67	3	✓			3	3			1	✓			3	3		3	3.7		0	0		0	0	0	S		3	0.0
mono-	Bromobenzene	108-86-1	0					0	0	0.5	3		✓		2	3	3	3	3	✓			3	2.5		2.5	3.0		0	0		0	0	0	S		3	0.0
	Tetrachloro-p-benzoquinone	118-75-2	0					0	0	0.5	3	✓			3	3			1	✓			3	3		3	3.5		0	0		0	0	0	S		3	0.0
2,3,5,6-	Tetrafluorobenzyl trans-2-(2,2-**	118712-89-3	0					0	0	0.5	3	✓			3	3			1	✓			3	3		3	3.5		0	0		0	0	0	S		3	0.0
2-(4-(3-(4-	Chorophenyl)-4,5-dihydropyra**	106359-93-7	0					0	0	0.5	3	✓			3	3	3	2	2.67	✓			3	3		3	3.5		0	0		0	0	0	S		3	0.0
Bis(2,2,6,6-	Tetramethyl-4-piperidyl) succin**	62782-03-0	0					0	0	0.5	1			✓	1	3			1	✓			3	2		2	2.5		0	0		0	0	0	S		3	0.0
),O,O',O',-	Tetrapropyl dithiopyrophosphate	3244-90-4	0					0	0	0.5	3	✓			3	3			1	✓			3	3		3	3.5		0	0		0	0	0	S		3	0.0
	Clopyralid	1702-17-6	0					0	0	0	3	✓			3	3	3	3	3	✓			3	3		3	3.0		0	0		0	0	0	S		3	0.0
, N, N', N'-	Tetramethyldithiobis (ethylene)**	17339-60-5	0					0	0	0	2		✓		2	3			1	✓			3	2.5		2.5	2.5		0	0		0	0	0	S		3	0.0
4,4'-	Thiodi-o-cresol	24197-34-0	0					0	0	0	3	✓			3	3			1	✓			3	3		3	3.0		0	0		0	0	0	S		3	0.0
2,4,5-	Trichloroaniline	636-30-6	0					0	0	0	3	✓			3	3			1	✓			3	3		3	3.0		0	0		0	0	0	S		3	0.0
	Dimethyldioctadecylammonium **	123312-54-9	0					0	0	0.5					0	3			1	✓			3	1.5		1.5	2.0		0	0		0	0	0	S		3	0.0
	Tetrachloroterephthalonitrite	1897-41-2	0					0	0.67	0.33					0	3			1	✓			3	1.5		1.5	1.8		0	0		0	0	0	S		3	0.0
o-	Nitrotoluene	88-72-2	0					0	0.67	1.33	1		✓		2	3	3	2	2.67	✓			3	2.5		2.5	3.8		0	0		0	0	0	S		3	0.0
4,8,12-	Trimethyltrideca-3,7,11-trienoic**	91853-67-7	0					0	0	0.5	1	✓			3		0	0	0	✓			3	3		3	3.5		0	0		0	0	0	S		3	0.0
2,4,6-	Trimethylbenzophenone	954-16-5	0					0	0	0.5		✓			3				0	✓			3	3		3	3.5		0	0		0	0	0	S		3	0.0

																																				1	2	2		1	2		E	C		R	I	S	K	S		1	2	1	2	3	3	3			
prefix	Substance Name	CAS No	1	2	4	5	8	10	11	14	19	20	21	22	23	24	25	26	27	28	29	32	33	34	35	36	37	38	39	40	40	40	41	42	43	44	45	45	46	48	49	49	50	51	52	53	54	55	56	57	58	59	60	60	61	61	62	63	64	65	None	
	Count		3	4	1	1	2	20	44	1	2	58	51	103	68	64	85	31	25	34	1	1	26	36	7	63	43	54	2	1	1	31	12	9	70	1	8	27	5	31	1	2	142	67	45	226	0	0	0	0	2	5	1	4	3	5	5	3	1	0	16	
	Oxides of Nitrogen	N/A																Ö						Ö																																						N/A
	Chromium (VI) compounds	7440-47-3											Ö				Ö	Ö									Ö	Ö							Ö				Ö			Ö	Ö			Ö															Ö	7440473
	Carbon monoxide	630-08-0							Ö						Ö																									Ö															Ö							630080
	Sulphur dioxide	7446-09-5													Ö	Ö																																														7446095
	Dichloromethane	75-09-2																														Ö																														75092
	Cadmium and compounds	7440-43-9																																																											Ö	7440439
	Particulate Matter 10.0 um	N/A																																																												N/A
	Sulphuric acid^^^	7664-93-9																							Ö																																					7664939
	Xylenes (individual or mixed isomer	1330-20-7						Ö				Ö	Ö															Ö																																		1330207
	Arsenic and compounds	7440-38-2													Ö		Ö																				Ö																									7440382
	Lead and compounds	7439-92-1																																																					Ö		Ö	Ö				7439921
	Trichloroethylene	79-01-6																													Ö														Ö	Ö																79016
1,3-	Butadiene (vinyl ethylene)	106-99-0							Ö																													Ö																								106990
	Benzene	71-43-2							Ö						Ö	Ö	Ö																				Ö			Ö																						71432
	Glutaraldehyde	111-30-8													Ö		Ö								Ö									Ö	Ö								Ö																			111308
	Tetrachloroethylene	127-18-4																														Ö												Ö		Ö																127184
	Total Nitrogen (in solution)	N/A																																																												N/A
	Polycyclic aromatic hydrocarbons	N/A																																																												N/A
2-	Ethoxyethanol	110-80-5						Ö				Ö	Ö	Ö																																								Ö		Ö						110805
2-	Ethoxyethanol acetate	111-15-9										Ö	Ö	Ö																																								Ö		Ö						111159
	Methyl ethyl ketone	78-93-3							Ö																	Ö	Ö																																			78933
	Acetone	67-64-1																																																												67641
	Ethylene glycol (1,2-ethanediol)	107-21-1												Ö																																																107211
	Methanol	67-56-1							Ö						Ö		Ö																																													67561
	Nickel carbonyl	13463-39-3																																																												13463393
	Methyl methacrylate	80-62-6							Ö																	Ö	Ö	Ö							Ö																											80626
	Total Phosphorus (in solution)	N/A																																																												N/A
	Methyl isobutyl ketone	108-10-1																																																												108101
	Cyanide (inorganic) compounds	N/A																Ö	Ö	Ö		Ö																																								N/A
	Cobalt and compounds	7440-48-4																																Ö	Ö																											7440484
	Fluoride compounds	N/A																																																												N/A
	Nickel subsulphide	12035-72-2																																																												12035722
	Toluene (methylbenzene)	108-88-3							Ö			Ö																																																		108883
	Toluene-2,4-diisocyanate	584-84-9													Ö											Ö	Ö	Ö						Ö																												584849
	Mercury and compounds	7439-97-6													Ö								Ö																																							7439976
1,2-	Dibromoethane	106-93-4													Ö	Ö	Ö									Ö	Ö	Ö										Ö						Ö		Ö																106934
	Hydrogen sulphide	7783-06-4							Ö									Ö																									Ö																			7783064
	Phosphoric acid^^^	7664-38-2																						Ö																																						7664382
	Hydrochloric acid^^^	7647-01-0													Ö											Ö																																				7647010
	Copper and compounds	7440-50-8																																																											Ö	7440508
	Chlorine dioxide	10049-04-4																																																											Ö	10049044
	Chlorine	7782-50-5													Ö											Ö	Ö	Ö															Ö																			7782505
	Nitric acid^^^	7697-37-2					Ö																		Ö																																					7697372
4,4-	Methylene bis 2,4 aniline (MOCA)	101-14-4												Ö																								Ö					Ö			Ö																101144
	Ammonia (total)	7664-41-7						Ö							Ö	Ö								Ö																			Ö																			7664417
	Ethylene oxide	75-21-8																																																												75218
	Magnesium oxide fume	1309-48-4																																																											Ö	1309484
	Zinc and compounds	7440-66-6																																																												7440666
	Acrylic acid	79-10-7						Ö																Ö																																						79107
	Phenol	108-95-2														Ö	Ö							Ö																																						108952
	Styrene (ethenylbenzene)	100-42-5						Ö				Ö														Ö		Ö																																		100425
	Boron and compounds	7440-42-8																																																												7440428
	Biphenyl (1,1-biphenyl)	92-52-4																								Ö	Ö	Ö															Ö			Ö																92524
	Nickel and compounds (not carbony	7440-02-0																														Ö			Ö																											7440020
	Formaldehyde (methyl aldehyde)	50-00-0													Ö	Ö	Ö							Ö								Ö			Ö									Ö																		50000
	Carbon disulphide	75-15-0							Ö						Ö											Ö		Ö												Ö																	Ö	Ö				75150

																																		1	2	2		1	2		E	C		R	I	S	K	S		1	2	1	2	3	3	3			
prefix	Substance Name	CAS No	1	2	4	5	8	10	11	14	19	20	21	22	23	24	25	26	27	28	29	32	33	34	35	36	37	38	39	40	40	40	41	42	43	44	45	45	46	48	49	49	50	51	52	53	54	55	56	57	58	59	60	60	61	61	62	63	64	65	None	
	Count		3	4	1	1	2	20	44	1	2	58	51	103	68	64	85	31	25	34	1	1	26	36	7	63	43	54	2	1	1	31	12	9	70	1	8	27	5	31	1	2	142	67	45	226	0	0	0	0	2	5	1	4	3	5	5	3	1	0	16	
	Acetonitrile	75-05-8						Ö						Ö	Ö	Ö																																													75058
	Acetaldehyde	75-07-0						Ö																	Ö	Ö					Ö																														75070
	Methylenebis (phenylisocyanate)	101-68-8									Ö														Ö	Ö	Ö						Ö																												101688
	Chromium (III) compounds	7440-47-3																																																											7440473
1,1,2-	Trichloroethane	79-00-5									Ö	Ö	Ö																																																79005
	Ethyl acetate	141-78-6																																																											141786
	Acrylonitrile (2-propenenitrile)	107-13-1						Ö						Ö	Ö	Ö											Ö										Ö																								107131
	Cyclohexane	110-82-7																																																											110827
	Vinyl chloride monomer	75-01-4						Ö																												Ö																									75014
	Chloroform (trichloromethane)	67-66-3									Ö		Ö														Ö				Ö								Ö																						67663
2-	Ethylhexyl phthalate (DEHP)	117-81-7																																																										Ö	117817
	Dibutyl phthalate	84-74-2																																																										Ö	84742
	Aniline (benzenamine)	62-53-3									Ö	Ö	Ö	Ö	Ö	Ö															Ö								Ö			Ö																			62533
	Cumene (1-methylethylbenzene)	98-82-8					Ö																			Ö																																			98828
	Chloroethane (ethyl chloride)	75-00-3						Ö																							Ö													Ö	Ö																75003
	Organo-tin compounds ++	N/A																																																											N/A
2-	Methoxyethanol	109-86-4					Ö				Ö	Ö	Ö																																								Ö		Ö						109864
2-	Methoxyethanol acetate	110-49-6									Ö	Ö	Ö																																								Ö		Ö						110496
	Manganese and compounds	7439-96-5																																																										Ö	7439965
	Beryllium and compounds	7440-41-7												Ö		Ö	Ö								Ö	Ö	Ö							Ö				Ö	Ö		Ö																			7440417
1,2-	Dichloroethane	107-06-2						Ö					Ö												Ö	Ö	Ö										Ö																								107062
	Benzene hexachloro- (HCB) +	608-73-1										Ö				Ö															Ö											Ö			Ö																608731
	Chlorophenols (di, tri, tetra) ++	N/A																																																											N/A
	Acrylamide	79-06-1												Ö	Ö	Ö																					Ö		Ö																						79061
	Acetic acid (ethanoic acid)	64-19-7					Ö																	Ö																																					64197
	Ethyl butyl ketone	106-35-4					Ö				Ö														Ö																																			106354
	Polychlorinated dioxins and furans	N/A																																																											N/A
	Antimony and compounds	7440-36-0																																																										Ö	7440360
	Selenium and compounds	7782-49-2												Ö		Ö						Ö																																						7782492
1,1,2,2-	Tetrachloroethane	79-34-5															Ö	Ö																									Ö		Ö																79345
	Ethylbenzene	100-41-4						Ö			Ö																																																	100414
	Ethanol	64-17-5																																																											64175
n-	Hexane	110-54-3						Ö			Ö																												Ö																						110543
	Triethylamine	121-44-8						Ö			Ö	Ö	Ö											Ö																																					121448
	Hydrogen cyanide	74-90-8															Ö																																												74908
	Creosote	8001-58-9																																			Ö																								8001589
	Methyl mercaptan	74-93-1						Ö			Ö																																																	74931
	Aldrin +	309-00-2													Ö	Ö															Ö								Ö			Ö			Ö																309002
	Phosgene	75-44-5															Ö						Ö																																					75445
	Methyl tert-butyl ether	1634-04-4																																																											1634044
	Heptachlor #	76-44-8													Ö	Ö						Ö									Ö											Ö			Ö																76448
	Asbestos ^	1332-21-4												Ö																						Ö			Ö																						1332214
	Aluminium (fume and dust)	7429-90-5																																																											7429905
	Barium and compounds	7440-39-3																																																										Ö	7440393
1,1,1,2-	Tetrachloroethane	630-20-6																																																											630206
	Epichlorohydrin (chloromethylox)	106-89-8					Ö							Ö	Ö	Ö							Ö											Ö			Ö																								106898
	Benzoyl chloride	98-88-4																					Ö																																					98884
	Toluene-2,6-diisocyanate	91-08-7												Ö											Ö	Ö	Ö						Ö																												91087
n-	Propanol	71-23-8																																																											71238
	Chlorpyrifos	2921-88-2													Ö	Ö																										Ö			Ö																2921882
	Methyl bromide ^	74-83-9												Ö											Ö	Ö	Ö															Ö			Ö						Ö										74839
	Acetylene (ethyne)	74-86-2																																																											74862
n-	Pentane	109-66-0																																																											109660
	Propylene oxide (methyloxirane)	75-56-9						Ö			Ö	Ö	Ö												Ö	Ö	Ö										Ö																								75569
	Crotonaldehyde (2-butenal)	4170-30-3						Ö						Ö											Ö	Ö	Ö																																			4170303
	Vinylidene chloride	75-35-4						Ö			Ö																				Ö																														75354

																																					1	2	2		1	2		E	C		R	I	S	K	S		1	2	1	2	3	3	3			
prefix	Substance Name	CAS No	1	2	4	5	8	10	11	14	19	20	21	22	23	24	25	26	27	28	29	32	33	34	35	36	37	38	39	40	40	40	41	42	43	44	45	45	46	48	49	49	50	51	52	53	54	55	56	57	58	59	60	60	61	61	62	63	64	65	None	
	Count		3	4	1	1	2	20	44	1	2	58	51	103	68	64	85	31	25	34	1	1	26	36	7	63	43	54	2	1	1	31	12	9	70	1	8	27	5	31	1	2	142	67	45	226	0	0	0	0	2	5	1	4	3	5	5	3	1	0	16	
1,4-	Dioxane	123-91-1							Ö		Ö															Ö	Ö					Ö																														123911
o-	Toluidine	95-53-4													Ö		Ö									Ö												Ö					Ö																			95534
	Acetone cyanohydrin	75-86-5																Ö	Ö	Ö																							Ö																			75865
	Tribromomethane (bromoform)	75-25-2													Ö											Ö	Ö																	Ö		Ö																75252
	Picric acid (2,4,6-trinitrophenol)	88-89-1		Ö	Ö										Ö	Ö	Ö																																													88891
1,2-	Diphenylhydrazine	122-66-7												Ö																								Ö																								122667
	Molybdenum trioxide	1313-27-5										Ö		Ö												Ö	Ö													Ö																						1313275
n-	Butyl alcohol	71-36-3						Ö				Ö																																																		71363
	Fenitrothion	122-14-5												Ö																													Ö			Ö																122145
S-	Bioallethrin	28434-00-6											Ö	Ö																													Ö			Ö																28434006
	Maleic anhydride	108-31-6												Ö												Ö	Ö	Ö						Ö																												108316
	Ethyl acrylate (2-propenoic acid)	140-88-5									Ö	Ö	Ö	Ö												Ö	Ö	Ö							Ö																											140885
	Dieldrin +	60-57-1															Ö		Ö													Ö								Ö			Ö			Ö																60571
	Thiourea	62-56-6												Ö																		Ö												Ö		Ö																62566
2,4-	Dinitrotoluene	121-14-2													Ö	Ö	Ö						Ö																																							121142
2-	Butoxyethanol	111-76-2																																																												111762
	Diacetone alcohol	123-42-2							Ö																	Ö																																				123422
	Methamidophos	10265-92-6														Ö				Ö						Ö																	Ö																			10265926
	Hexachlorobutadiene	87-68-3																																																											Ö	87683
	Phthalic anhydride	85-44-9																								Ö	Ö	Ö																																		85449
	Diethylamine	109-89-7							Ö			Ö	Ö	Ö											Ö																																					109897
	Chloromethane (methyl chloride)	74-87-3											Ö		Ö		Ö										Ö	Ö				Ö																														74873
	Phosphamidon	13171-21-6														Ö				Ö												Ö											Ö			Ö																13171216
2,6-	Dinitrotoluene	606-20-2																																																												606202
	Pyridine	110-86-1							Ö			Ö	Ö	Ö																																																110861
	Cyclohexanone	108-94-1						Ö				Ö																																																		108941
	Coumaphos	56-72-4											Ö							Ö																							Ö			Ö																56724
	Monocrotophos	6923-22-4														Ö				Ö																							Ö			Ö																6923224
	Fensulfothlan	115-90-2																	Ö	Ö																							Ö			Ö																115902
	Disulfoton	298-04-4																	Ö	Ö																							Ö			Ö																298044
	Methidathion	950-37-8											Ö							Ö																							Ö			Ö																950378
1,2-	Dichloro-(E)-ethene	156-60-5							Ö			Ö																																	Ö	Ö																156605
	Hexachloroethane	67-72-1																																																										Ö	67721
1,2,4-	Trimethylbenzene	25551-13-7						Ö																			Ö																																			25551137
	Methyl amine (methanamine)	74-89-5							Ö			Ö															Ö	Ö					Ö																													74895
	Cyclohexanol	108-93-0										Ö		Ö													Ö	Ö																																		108930
	Methyl acrylate	96-33-3							Ö			Ö		Ö												Ö	Ö	Ö																																		96333
	Pirimiphos-ethyl	23505-41-1											Ö				Ö																										Ö			Ö																23505411
	Oxydemeton-methyl	301-12-2														Ö	Ö																										Ö								Ö											301122
	Leptophos	21609-90-5											Ö				Ö													Ö													Ö			Ö																21609905
	Ethanolamine	141-43-5										Ö														Ö	Ö	Ö																																		141435
	Dimethylamine (methanamine)	124-40-3							Ö			Ö															Ö	Ö					Ö																													124403
	Hydroxylamine sulphate (1:1)	10046-00-1												Ö												Ö		Ö							Ö					Ö			Ö																			10046001
	Isophorone	78-59-1																								Ö	Ö	Ö																																		78591
	Methyl propyl ketone (MPK)	107-87-9																																																										Ö	107879
	Diazinon	333-41-5												Ö																													Ö			Ö																333415
	Dichlofenthion	97-17-6												Ö																													Ö			Ö																97176
	Demeton	8065-48-3																	Ö	Ö																							Ö																			8065483
3,3-	Dichlorobenzidine	91-94-1											Ö																						Ö			Ö					Ö			Ö																91941
	Bromochloromethane	74-97-5																																																										Ö	74975
bis-(2-	Chloro-1-methylethyl) ether	108-60-1																																																											108601
	Demeton-O	298-03-3																	Ö	Ö																							Ö																			298033
	Hydroxylamine hydrochloride	5470-11-1												Ö	Ö											Ö		Ö							Ö					Ö			Ö																			5470111
	Tetraethyl pyrophosphate (TEPP)	107-49-3																	Ö	Ö																							Ö																			107493
	Titanium tetrachloride	7550-45-0								Ö														Ö		Ö	Ö																																			7550450
	Benzidine	29398-96-7																																																											29398967

																																						1	2	2		1	2		E	C		R	I	S	K	S		1	2	1	2	3	3	3			
prefix	Substance Name	CAS No	1	2	4	5	8	10	11	14	19	20	21	22	23	24	25	26	27	28	29	32	33	34	35	36	37	38	39	40	40	40	41	42	43	44	45	45	46	48	49	49	50	51	52	53	54	55	56	57	58	59	60	60	61	61	62	63	64	65	None	
	Count		3	4	1	1	2	20	44	1	2	58	51	103	68	64	85	31	25	34	1	1	26	36	7	63	43	54	2	1	1	31	12	9	70	1	8	27	5	31	1	2	142	67	45	226	0	0	0	0	2	5	1	4	3	5	5	3	1	0	16	
	Chloromethyl methyl ether	107-30-2							Ö			Ö	Ö	Ö																									Ö																									107302
	Vinyl toluene	25013-15-4																																																												25013154
	Aluminium oxide (fibrous form)	1344-28-1																																																												1344281
	Chlorobenzenes (di, tri, tetra) ++	N/A																																																												N/A
	Omethoate	1113-02-6											Ö				Ö																											Ö																			1113026
	Arsine	7784-42-1							Ö			Ö						Ö																								Ö			Ö			Ö																7784421
	Triphenyltin acetate	900-95-8														Ö	Ö	Ö							Ö		Ö							Ö									Ö			Ö																900958
	EPN	2104-64-5																	Ö	Ö																								Ö			Ö																2104645
	Dicrotophos	141-66-2														Ö				Ö																								Ö			Ö						Ö										141662
	Parathion	56-38-2																	Ö	Ö																								Ö			Ö																56382
	Chlorfenvinphos	470-90-6														Ö				Ö																								Ö			Ö																470906
	Nitrobenzene	98-95-3													Ö	Ö	Ö															Ö								Ö				Ö		Ö											Ö					98953
	Dinoseb	88-85-7														Ö	Ö								Ö											Ö							Ö			Ö										Ö	Ö					88857
	Amines, polyethylenepoly-	68131-73-7											Ö	Ö										Ö											Ö							Ö			Ö																68131737
m-	Phenylenediamine	108-45-2													Ö	Ö	Ö																			Ö							Ö			Ö																108452
p-	Diaminobenzene	106-50-3													Ö	Ö	Ö																			Ö							Ö			Ö																106503
	Butyl mercaptan	54812-86-1																																																												54812861
	Phosalone	2310-17-0											Ö				Ö																											Ö			Ö																2310170
	Carbophenothion	786-19-6														Ö	Ö																									Ö			Ö																786196
	Bromophos-ethyl	4824-78-6											Ö				Ö																											Ö			Ö																4824786
	Silver and compounds	7440-22-4																																																											Ö	7440224
	Tetraethylenepentamine	112-57-2											Ö	Ö										Ö											Ö								Ö		Ö																112572
	Phenylhydrazine	100-63-0													Ö	Ö	Ö								Ö																Ö																			100630
	Amitrole	61-82-5												Ö																	Ö								Ö				Ö		Ö																61825
	Thallium and compounds	7440-28-0																Ö		Ö			Ö																																							7440280
	Crufomate	299-86-5											Ö	Ö																													Ö			Ö																299865
2,4-	Dichlorophenol	120-83-2											Ö	Ö										Ö																				Ö		Ö																120832
	Demeton-S-methyl	919-86-8														Ö	Ö																											Ö		Ö																919868
2,4,5-	Trichlorophenol	95-95-4												Ö												Ö																Ö			Ö																95954
	Diethylene diamine	110-85-0																								Ö										Ö	Ö										Ö	Ö																110850
	Triethylenetetramine	112-24-3											Ö										Ö											Ö									Ö	Ö																112243
	Cycloexyldimethoxymethylsilane	17865-32-6																												Ö																Ö		Ö																17865326
m-	Diaminobenzene	108-42-2																																											Ö			Ö																108422
Bis(	Hydroxylammonium) sulphate	10039-54-0												Ö												Ö		Ö							Ö				Ö			Ö																			10039540
1,1,1-	Trichloroethane	71-55-6										Ö																																									Ö										71556
ert-pentyl-2-	Benzothiazolesulfenamide	110799-28-6																																			Ö										Ö	Ö																110799286
	Resorcinol	108-46-3												Ö												Ö		Ö															Ö																			108463
(3,5-di-tert-	Butylsalicilato-O1,O2)zinc	42405-40-3							Ö					Ö																																Ö																42405403
	Dimethylnitrosamine	62-75-9															Ö	Ö																				Ö		Ö				Ö		Ö																62759
	Ethyleneimine	151-56-4							Ö									Ö	Ö	Ö					Ö																Ö	Ö					Ö		Ö																151564
	Hexanitrodiphenylamine	131-73-7		Ö														Ö	Ö	Ö			Ö																								Ö		Ö																131737
	Dinitrobenzene (mixed isomers)	25154-54-5																Ö	Ö	Ö			Ö																							Ö			Ö																25154545
4-	Methoxy-2-nitroaniline	96-96-8																Ö	Ö	Ö			Ö																									Ö	Ö																96968
2-	Butylamine	13952-84-6							Ö			Ö	Ö												Ö																			Ö																			13952846
	Hexanitrodiphenylamine	2844-92-0	Ö															Ö	Ö	Ö				Ö																						Ö		Ö																2844920
	Phosacetim	4104-14-7																	Ö	Ö																								Ö			Ö																4104147
	Fanofos	944-22-9																	Ö	Ö																								Ö			Ö																944229
	Dialifos	10311-84-9														Ö				Ö																								Ö			Ö																10311849
	Endrin +	72-20-8														Ö				Ö																								Ö			Ö																72208
	Hexachlorocyclopentadiene	77-47-4												Ö		Ö		Ö						Ö																			Ö			Ö																77474
	Hexachlorobenzene +	118-74-1															Ö																				Ö		Ö			Ö			Ö																118741
	Dichlorodiphenyltrichloroethane (DD	50-29-3															Ö															Ö							Ö			Ö			Ö																50293
o-	Ethylhydroxylamine	624-86-2							Ö			Ö			Ö	Ö	Ö								Ö									Ö				Ö			Ö																			624862
1,3-	Dichloropropene	542-75-6						Ö				Ö	Ö				Ö								Ö	Ö	Ö							Ö								Ö			Ö																542756
2-	Methyl-4-phenylpentanol	92585-24-5		Ö												Ö																			Ö								Ö		Ö																92585245
	Heptachlor epoxide +	1024-57-3															Ö						Ö								Ö										Ö			Ö																1024573

																																					1	2	2		1	2		E	C		R	I	S	K	S		1	2	1	2	3	3	3			
prefix	Substance Name	CAS No	1	2	4	5	8	10	11	14	19	20	21	22	23	24	25	26	27	28	29	32	33	34	35	36	37	38	39	40	40	40	41	42	43	44	45	45	46	48	49	49	50	51	52	53	54	55	56	57	58	59	60	60	61	61	62	63	64	65	None	
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p-	Nitroaniline	100-00-6													Ö	Ö	Ö						Ö																						Ö	Ö																100006
N-	Methylaniline	100-61-8													Ö	Ö	Ö						Ö																				Ö			Ö																100618
3,5-	Dichloro-2,4-difluorobenzoyl fl**	101513-70-6												Ö	Ö						Ö			Ö											Ö										Ö	Ö																101513706
3-(Bis(2-	Ethylexyl)aminomethyl)benzoth**	105254-85-1																						Ö											Ö								Ö			Ö																105254851
2-	Piperazin-1-ylethylamine	140-31-4											Ö	Ö										Ö											Ö										Ö	Ö																140314
	Isophorone diamine	2855-13-2											Ö	Ö										Ö											Ö										Ö	Ö																2855132
m-	Phenylenediamine dihydrochlor**	541-69-5													Ö	Ö	Ö																		Ö								Ö			Ö																541695
3-	Chloro-2-methylpropene	563-47-3							Ö			Ö		Ö										Ö											Ö									Ö		Ö																563473
2,5-	Diaminotoluene sulphate	615-50-9										Ö	Ö				Ö																		Ö								Ö			Ö																615509
N-	Methyl-p-toluidine	623-08-5													Ö	Ö	Ö						Ö																						Ö	Ö																623085
N,N-bis(2-	Ethylexyl)-((1,2,4-triazol-1-yl)**	91273-04-0																						Ö											Ö									Ö		Ö																91273040
o-	Diaminobenzene	95-54-5													Ö	Ö	Ö																		Ö								Ö			Ö																95545
1-	Amino-3-nitrobenzene	99-09-2													Ö	Ö	Ö						Ö																						Ö	Ö																99092
p-	Nitrotoluene	99-99-0													Ö	Ö	Ö						Ö																					Ö		Ö																99990
2-	Propen-1-ol	107-18-6						Ö							Ö	Ö	Ö									Ö	Ö	Ö															Ö																			107186
	Ethyl chloroacetate	105-39-5													Ö	Ö	Ö																										Ö																			105395
	Benzyl-2-hydroxydodecyldime**	113694-52-3												Ö										Ö																			Ö			Ö																113694523
C12-14-tert-	Alkylamine, methylphosphonic **	119415-07-5												Ö										Ö																				Ö		Ö																119415075
2,6-	Dichloro-4-nitroanisole	17742-69-7															Ö																											Ö		Ö																17742697
	Mecarbam	2595-54-2														Ö	Ö																										Ö			Ö																2595542
	Chloroacetic acid	79-11-8															Ö							Ö																			Ö																			79118
3-(3-	Methylpent-3-yl)isoxazol-5-yla**	82560-06-3													Ö		Ö																Ö												Ö	Ö																82560063
3,3'-	Dichlorobenzidine, salts of	612-83-9											Ö																						Ö			Ö					Ö			Ö																612839
4,4'-	Methylenedi-o-toluidine	838-88-0												Ö																					Ö			Ö					Ö			Ö																838880
2-	Naphthylamine	91-59-8												Ö																							Ö							Ö		Ö																91598
S-	Benzyl N,N-dipropylthiocarbamate	52888-80-9												Ö																										Ö				Ö		Ö																52888809
	Bromobenzylbromotoluene mix**	99688-47-8												Ö																					Ö					Ö			Ö			Ö																99688478
2-	Naphthylamine, salts of	553-00-4												Ö																								Ö						Ö		Ö																553004
	Isobutyl 3,4-epoxybutyrate	100181-71-3																										Ö							Ö								Ö			Ö																100181713
3,3'-	Dimethylbenzidine, salts of	612-82-8												Ö																								Ö						Ö		Ö																612828
6-	Methyl-2,4-bis(methylthio)phen**	106264-79-3												Ö																					Ö								Ö			Ö																106264793
	Benzothiazole-2-thiol	149-30-4																																	Ö								Ö			Ö																149304
4-	Chloro-3-methylphenol	59-50-7											Ö	Ö																			Ö		Ö								Ö																			59507
Bis(2-	Ethylexyl)dithiodiacetate	62268-47-7												Ö																					Ö									Ö		Ö																62268477
	Mirex ##	2385-85-5											Ö	Ö																		Ö											Ö			Ö											Ö	Ö	Ö			2385855
	Chlordane #	57-74-9											Ö	Ö																		Ö											Ö			Ö																57749
1,2-	Dichloroethylene	540-59-0							Ö			Ö																																	Ö	Ö																540590
1,1-	Dichloroethane	75-34-3							Ö					Ö												Ö	Ö																		Ö	Ö																75343
	Chlorobenzene	108-90-7						Ö				Ö																																Ö		Ö																108907
1-	Naphthylamine	134-32-7												Ö																														Ö		Ö																134327
	Pentachloronaphthalene	1321-64-8											Ö	Ö												Ö		Ö															Ö			Ö																1321648
	Guazatine	13516-27-3											Ö	Ö												Ö		Ö															Ö			Ö																13516273
3,5-	Dichloro-4-(1,1,2,2-tetrafluoro**	104147-32-2												Ö																													Ö			Ö																104147322
p-	Chlorotoluene	106-43-4										Ö																																Ö		Ö																106434
3-	Chlorotoluene	108-41-8										Ö																																Ö		Ö																108418
	Chlorotoluene (mixed isomers)	25168-05-2										Ö																																Ö		Ö																25168052
	Cyanophos	2636-26-2											Ö	Ö																													Ö			Ö																2636262
2-(2-	Bromoethoxy)anisole	4463-59-6												Ö																															Ö	Ö																4463596
3-	Aminophenol	591-27-5										Ö		Ö																														Ö		Ö																591275
	Pentachlorobenzene +	608-93-5							Ö					Ö																													Ö			Ö																608935
S-(1-	Methyl-1-phenylethyl)piperidin**	61432-55-1												Ö																														Ö		Ö																61432551
2-	Methyl-1-(4-methyltiophenyl)-2**	71868-10-5												Ö																														Ö		Ö																71868105
3-(2-(	Diaminomethyleneamino)thiazol**	76823-93-3												Ö																															Ö	Ö																76823933
	Menazon	78-57-9												Ö																															Ö	Ö																78579
2-	Amino-4,6-dinitrophenol	96-91-3	Ö									Ö	Ö	Ö																															Ö	Ö																96913
kis(4,6-bis(	Butyl-(n-methyl-2,2,6,6-tetrame**	106990-43-6																																	Ö									Ö		Ö																106990436

																																					1	2	2		1	2		E	C		R	I	S	K	S		1	2	1	2	3	3	3			
prefix	Substance Name	CAS No	1	2	4	5	8	10	11	14	19	20	21	22	23	24	25	26	27	28	29	32	33	34	35	36	37	38	39	40	40	40	41	42	43	44	45	45	46	48	49	49	50	51	52	53	54	55	56	57	58	59	60	60	61	61	62	63	64	65	None	
	Count		3	4	1	1	2	20	44	1	2	58	51	103	68	64	85	31	25	34	1	1	26	36	7	63	43	54	2	1	1	31	12	9	70	1	8	27	5	31	1	2	142	67	45	226	0	0	0	0	2	5	1	4	3	5	5	3	1	0	16	
	Methylene dithiocyanate	6317-18-6																																	Ö								Ö																			6317186
Bis(4-	Dodecylphenyl)iodonium hexafl**	71786-70-4																																	Ö										Ö	Ö																71786704
1,5-	Naphthylenediamine	2243-62-1																														Ö											Ö			Ö																2243621
	Diphenylamine	122-39-4																																									Ö			Ö																122394
	Morphotion	144-41-2																																									Ö			Ö																144412
(N-	Benzyl-N-ethyl)amino-3'-hyd…**	55845-90-4																															Ö											Ö		Ö																55845904
	Methyl alpha-((4,6-dimethoxyp**	83055-99-6																																										Ö		Ö																83055996
	Disodium 1-amino-4-(4-benzen**	85153-93-1																															Ö												Ö	Ö																85153931
	Hydroxylamine	7803-49-8				Ö								Ö				Ö								Ö	Ö		Ö														Ö												Ö							7803498
o-	Anisidine	90-04-0																Ö	Ö	Ö			Ö														Ö							Ö		Ö																90040
3-	Chloropropene	107-05-1							Ö									Ö																									Ö			Ö																107051
2,4-	Dinitroaniline	97-02-9																Ö	Ö	Ö			Ö																					Ö		Ö																97029
	Fentin hydroxide	76-87-9															Ö	Ö	Ö							Ö		Ö															Ö			Ö																76879
	Isodrin +	465-73-6																Ö	Ö	Ö																							Ö			Ö																465736
N-	Methyl-o-toluidine	611-21-2												Ö	Ö	Ö				Ö																									Ö	Ö																611212
	Pentachloroethane	76-01-7													Ö																	Ö								Ö				Ö		Ö																76017
1-	Dodecyl-2-pyrrolidone	2687-96-9																						Ö											Ö								Ö			Ö																2687969
	Chloroaniline (mixed isomers)	27134-26-5													Ö	Ö	Ö						Ö																				Ö			Ö																27134265
N-	Methyl-m-toluidine	696-44-6													Ö	Ö	Ö						Ö																						Ö	Ö																696446
N,N-	Diethylaniline	91-66-7													Ö	Ö	Ö						Ö																					Ö		Ö																91667
2-	Methyl-p-phenylenediamine	95-70-5										Ö	Ö				Ö																		Ö								Ö			Ö																95705
	Dicyclohexylamine	101-83-7												Ö										Ö																			Ö			Ö																101837
	Lindane +	58-89-9													Ö	Ö	Ö									Ö	Ö																Ö			Ö																58899
1,1-	Dichloropropene	563-58-6							Ö								Ö																												Ö	Ö																563586
4,4-	Benzidine (Diaminobiphenyl)	92-87-5												Ö																							Ö						Ö			Ö																92875
N,N-	Dimethyl-2-(3-(4-chlorophenyl)**	10357-99-0												Ö																					Ö					Ö				Ö		Ö																10357990
	Dichlofluanid	1085-98-9																								Ö									Ö								Ö			Ö																1085989
1-	Methyl-3-nitro-1-nitrosoguanidin	70-25-7										Ö														Ö		Ö										Ö						Ö		Ö						Ö										70257
3,3-	Dimethylbenzidine	119-93-7												Ö																								Ö						Ö		Ö																119937
2,4-di-tert-	Butylcyclohexanone	13019-04-0																										Ö																Ö		Ö																13019040
2-	Bromo-2-nitropropane-1,3-diol	52-51-7											Ö	Ö													Ö	Ö					Ö										Ö			Ö																52517
	Dicyclopentadiene	77-73-6							Ö			Ö		Ö												Ö	Ö	Ö																Ö		Ö																77736
	Potassium-2-hydroxycarbazol**	96566-70-0												Ö												Ö	Ö																		Ö	Ö																96566700
4-	Aminophenol	123-30-8										Ö		Ö																		Ö											Ö			Ö																123308
	Benzyltributhylammonium 4-hy**	102561-46-6										Ö																																Ö		Ö																102561466
2-	Chloro-4-nitroaniline	121-87-9												Ö																														Ö		Ö																121879
	Methylene dibromide	74-95-3										Ö																																	Ö	Ö																74953
Exo-(+/-)-1-	Methyl-2-(2-methylbenzyloxy)-**	87818-31-3										Ö																																Ö		Ö																87818313
3-(N-	Methyl-N-(4-methylamino-3-nit**	93633-79-5												Ö																															Ö	Ö																93633795
o-	Chlorotoluene	95-49-8										Ö																																Ö		Ö																95498
3-	Chloro-4,5,alpha,alpha,alpha-p**	77227-99-7						Ö				Ö		Ö																																																77227997
2'-(2-	Cyano-4,6-dinitrophenylazo)-5**	106359-94-8																																	Ö										Ö	Ö																106359948
N-(4-(3-(4-	Cyanophenyl)ureido)-3-hydrox**	108673-51-4																																	Ö											Ö																108673514
	Methyl 2-(3-nitrobenzylidene)**	39562-17-9																																	Ö								Ö			Ö																39562179
	Methyl-2-(2-nitrobenzylidene)**	39562-27-1																																	Ö									Ö		Ö																39562271
4,4'-	Oxibys(ethylenethio)diphenol	90884-29-0																																	Ö									Ö		Ö																90884290
4,4'-	Isobutylethylidenediphenol	6807-17-6																																									Ö			Ö																6807176
2(3-(	Prop-1-en-2-yl)phenyl)prop-2-**	2094-99-7										Ö						Ö						Ö										Ö	Ö					Ö			Ö			Ö																2094997
1,4-	Dichlorobut-2-ene	764-41-0														Ö	Ö	Ö						Ö														Ö					Ö			Ö																764410
p-	Anisidine	104-94-9																Ö	Ö	Ö			Ö																				Ö																			104949
1,3-	Dichloro-5-ethyl-5-methylimida.**	89415-87-2					Ö							Ö				Ö						Ö											Ö								Ö																			89415872
	Pentachlorophenol +	87-86-5														Ö	Ö	Ö								Ö	Ö	Ö				Ö											Ö			Ö																87865
	Mephasfolan	950-10-7																	Ö	Ö																								Ö		Ö																950107
	Isobenzan	297-78-9																	Ö	Ö																							Ö																			297789
1,2-	Dibromo-3-chloropropane	96-12-8										Ö		Ö			Ö																					Ö	Ö	Ö					Ö	Ö							Ö									96128
N,N-	Hydrazinodiacetic acid	19247-05-3												Ö			Ö																		Ö					Ö					Ö	Ö																19247053

prefix	Substance Name	CAS No	1	2	4	5	8	10	11	14	19	20	21	22	23	24	25	26	27	28	29	32	33	34	35	36	37	38	39	40	40	40	41	42	43	44	45	45	46	48	49	49	50	51	52	53	54	55	56	57	58	59	60	60	61	61	62	63	64	65	None	
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Z-1,3-	Dichloropropene	10061-01-5						Ô				Ô	Ô				Ô									Ô	Ô	Ô							Ô									Ô			Ô																	10061015
N,N-	Dimethyltoluidine	29526-93-7												Ô	Ô	Ô						Ô																						Ô	Ô																					29526937
	Pentaethylenehexamine	4067-16-7																						Ô										Ô										Ô		Ô																		4067167
p-	Phenylenediamine dihydrochlor**	624-18-0													Ô	Ô	Ô																	Ô										Ô			Ô																		624180
	Benzyldimethylamine	103-83-3						Ô				Ô	Ô	Ô										Ô																						Ô	Ô																					103833
	Phenkapton	2275-14-1													Ô	Ô	Ô																												Ô			Ô																					2275141
2,2'-	Dimethyl-4,4'methylenebis(cyc**	6864-37-5												Ô	Ô	Ô																												Ô			Ô																					6864375
(2-(1,3-	Dioxolan-2-yl)ethyl)triphenyl….**	86608-70-0												Ô									Ô										Ô											Ô	Ô																					86608700
m-	Mentha-1,3(8)-diene	17092-80-7																										Ô																Ô			Ô																					17092807
4-	Methyl-m-phenylenediamine	95-70-8																										Ô																Ô			Ô																					95708
1-	Butyl-2-methylpiridinium bromide	26576-84-1												Ô																																Ô			Ô																					26576841
	Methyl 3-(3-tert-butyl-4-hydrox**	6386-39-6												Ô																																Ô			Ô																					6386396
3-	Chloro-5-trifluoromethyl-2-pyri**	79456-26-1												Ô																																Ô			Ô																					79456261
	Haloxifop-(2-ethoxyethyl)	87237-48-7												Ô																																Ô			Ô																					87237487
amino-3((5-	Carboxymethyl-4-methyl-1,3-th**	111298-82-9																															Ô	Ô	Ô								Ô	Ô																					111298829
6-(2,3-	Dimethylmaleimido)hexyl metha**	63740-41-0																																	Ô										Ô			Ô																					63740410
	Trisodium bis (2-(5-chloro-4-ni**	93952-24-0																															Ô											Ô	Ô																					93952240
1,1,2,2-	Tetrabromoethane	79-27-6																Ô								Ô																			Ô	Ô																					79276
	Trichloronate	327-98-0														Ô				Ô																										Ô			Ô																					327980
1,3,5-	TGIC - Tris(oxiranylmethyl)-1,3,5-t	2451-62-9												Ô	Ô		Ô																Ô		Ô						Ô		Ô			Ô	Ô																					2451629
	Toluene-2,4-diammonium sulphat	65321-67-7											Ô				Ô									Ô									Ô				Ô						Ô				Ô																					65321677
	Carbon tetrachloride ^	56-23-5													Ô	Ô	Ô														Ô											Ô			Ô	Ô							Ô																					56235
	Tricresyl phosphate (mixed isome	78-30-8													Ô	Ô	Ô												Ô																	Ô			Ô																					78308
p-	Toluidine	106-49-0													Ô	Ô	Ô						Ô																							Ô																									106490
m-	Toluidine	108-44-1													Ô	Ô	Ô						Ô																							Ô																									108441
Tetrakis(	Tetramethylammonium) 6-amino**	116340-05-7															Ô																			Ô											Ô	Ô																					116340057
	Sodium-5-n-butylbenzotriazole	118685-34-0												Ô										Ô												Ô											Ô			Ô																					118685340
hexakis(	Tetramethylammonium) 4,4'-vin**	124537-30-0															Ô																			Ô											Ô	Ô																					124537300
C8-18	Alkylbis(2-hydroxyethyl)ammo**	68132-19-4													Ô									Ô												Ô											Ô			Ô																					68132194
1-	Amino-2-nitrobenzene	88-74-4													Ô	Ô	Ô						Ô																							Ô			Ô																					88744
2,3,4-	Trichlorobut-1-ene	2431-50-7												Ô	Ô												Ô	Ô	Ô				Ô													Ô			Ô																					2431507
	Allylamine	107-11-9							Ô						Ô	Ô	Ô																													Ô			Ô																					107119
	Vamidothion	2275-23-2											Ô				Ô																													Ô																									2275232
	Tricresyl phosphate (mixed isome	78-32-0												Ô	Ô																														Ô			Ô																					78320
4-	Amino-3-fluorophenol	399-95-1												Ô																					Ô				Ô						Ô			Ô																					399951
	Tetradecylammoniumbis(1-(5-**	88377-66-6												Ô																											Ô											Ô																					88377666
	Benzidine, salts of	531-85-1												Ô																									Ô											Ô			Ô																					531851
	Nitrosodipropylamine	621-64-7												Ô																									Ô												Ô		Ô																					621647
2-	Methyl-m-phenylenediamine	823-40-5											Ô	Ô																		Ô			Ô													Ô			Ô																					823405
	Toxaphene ##	8001-35-2	Ô	Ô																						Ô	Ô	Ô				Ô													Ô			Ô																					8001352
mono-	Bromobenzene	108-86-1						Ô																				Ô																			Ô			Ô																					108861
	Tetrachloro-p-benzoquinone	118-75-2																								Ô		Ô																			Ô			Ô																					118752
2,3,5,6-	Tetrafluorobenzyl trans-2-(2,2-**	118712-89-3																										Ô																			Ô			Ô																					118712893
2-(4-(3-(4-	Chorophenyl)-4,5-dihydropyra**	106359-93-7																								Ô																			Ô			Ô																					106359937
Bis(2,2,6,6-	Tetramethyl-4-piperidyl) succin**	62782-03-0																								Ô																						Ô	Ô																					62782030
),O,O',O',-	Tetrapropyl dithiopyrophosphate	3244-90-4											Ô	Ô																																Ô			Ô																					3244904
	Clopyralid	1702-17-6																																Ô												Ô			Ô																					1702176
, N, N', N'-	Tetramethyldithiobis (ethylene)**	17339-60-5																																													Ô			Ô																				Ô	17339605
4,4'-	Thiodi-o-cresol	24197-34-0																															Ô													Ô			Ô																					24197340
2,4,5-	Trichloroaniline	636-30-6																																													Ô			Ô																					636306
	Dimethyldioctadecylammonium **	123312-54-9																								Ô																							Ô			Ô																					123312549
	Tetrachloroterephthalonitrite	1897-41-2																																	Ô															Ô			Ô																					1897412
o-	Nitrotoluene	88-72-2													Ô	Ô	Ô						Ô																											Ô			Ô																					88722
4,8,12-	Trimethyltrideca-3,7,11-trienoic**	91853-67-7																										Ô																							Ô			Ô																					91853677
2,4,6-	Trimethylbenzophenone	954-16-5												Ô												Ô																							Ô			Ô																					954165

prefix	Substance Name	CAS No																
	Count					**Options**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Ave**	
						Count	390	390	390	390	390	390	390	390	82	55		
	Oxides of Nitrogen	N/A			Oxides of Nitrogen	N/A	1	1	1	1	1	1	1	1	✓	✓	1.0	391
	Chromium (VI) compounds	7440-47-3			Chromium (VI) compounds	7440-47-3	2	2	2	1	1	1	1	8	✓	✓	2.3	390
	Carbon monoxide	630-08-0			Carbon monoxide	630-08-0	5	3	12	56	38	82	3	2			25.1	376
	Sulphur dioxide	7446-09-5			Sulphur dioxide	7446-09-5	4	3	6	18	17	18	5	2	✓	✓	9.1	384
	Dichloromethane	75-09-2			Dichloromethane	75-09-2	8	5	7	56	38	56	4	8	✓	✓	22.8	377
	Cadmium and compounds	7440-43-9			Cadmium and compounds	7440-43-9	3	6	3	1	1	1	15	17	✓	✓	5.9	389
	Particulate Matter 10.0 um	N/A			Particulate Matter 10.0 um	N/A	9	7	15	1	1	1	7	19	✓	✓	7.5	386
	Sulphuric acid^^^	7664-93-9			Sulphuric acid^^^	7664-93-9	7	8	5	18	17	18	13	2	✓	✓	11.0	383
	Xylenes (individual or mixed isomer	1330-20-7	*		Xylenes (individual or mixed isome	1330-20-7	14	9	22	56	38	82	6	10		✓	29.6	372
	Arsenic and compounds	7440-38-2			Arsenic and compounds	7440-38-2	6	9	4	1	1	1	17	17	✓	✓	7.0	387
	Lead and compounds	7439-92-1			Lead and compounds	7439-92-1	14	11	9	1	1	1	22	14	✓	✓	9.1	384
	Trichloroethylene	79-01-6			Trichloroethylene	79-01-6	14	12	10	132	109	131	21	28		✓	57.1	347
1,3-	Butadiene (vinyl ethylene)	106-99-0		1,3-	Butadiene (vinyl ethylene)	106-99-0	14	12	27	56	38	82	14	2			30.6	370
	Benzene	71-43-2			Benzene	71-43-2	18	14	16	56	38	82	15	12		✓	31.4	367
	Glutaraldehyde	111-30-8	*		Glutaraldehyde	111-30-8	18	14	7	1	1	1	8	2	✓	✓	6.5	388
	Tetrachloroethylene	127-18-4			Tetrachloroethylene	127-18-4	13	16	11	56	38	56	19	21	✓	✓	28.8	373
	Total Nitrogen (in solution)	N/A			Total Nitrogen (in solution)	N/A	9	17	19	18	17	18	32	10	✓		17.5	381
	Polycyclic aromatic hydrocarbons	N/A			Polycyclic aromatic hydrocarbons	N/A	25	18	17	18	17	18	11	21	✓	✓	18.1	380
2-	Ethoxyethanol	110-80-5		2-	Ethoxyethanol	110-80-5	26	19	201	132	109	212	82	98			109.9	280
2-	Ethoxyethanol acetate	111-15-9		2-	Ethoxyethanol acetate	111-15-9	26	19	201	132	109	212	82	98			109.9	280
	Methyl ethyl ketone	78-93-3	2-Butanone		Methyl ethyl ketone	78-93-3	35	21	32	56	38	56	10	26	✓	✓	34.3	364
	Acetone	67-64-1	2-Propanone		Acetone	67-64-1	42	22	92	132	109	131	9	2			67.4	333
	Ethylene glycol (1,2-ethanediol)	107-21-1			Ethylene glycol (1,2-ethanediol)	107-21-1	54	23	41	132	109	131	12	26			66.0	335
	Methanol	67-56-1			Methanol	67-56-1	59	24	28	56	38	56	18	28	✓	✓	38.4	361
	Nickel carbonyl	13463-39-3			Nickel carbonyl	13463-39-3	18	25	12	18	38	18	27	20	✓	✓	22.0	378
	Methyl methacrylate	80-62-6	2-Propenoic acid 2-methyl-,methyl ester		Methyl methacrylate	80-62-6	54	26	23	18	17	18	23	42	✓	✓	27.6	374
	Total Phosphorus (in solution)	N/A			Total Phosphorus (in solution)	N/A	59	27	66	56	38	82	54	25			50.9	353
	Methyl isobutyl ketone	108-10-1	*		Methyl isobutyl ketone	108-10-1	73	27	47	132	109	131	25	28			71.5	326
	Cyanide (inorganic) compounds	N/A			Cyanide (inorganic) compounds	N/A	22	27	14	1	1	1	19	21	✓	✓	13.3	382
	Cobalt and compounds	7440-48-4			Cobalt and compounds	7440-48-4	59	27	30	18	17	18	30	50	✓	✓	31.1	369
	Fluoride compounds	N/A	Hydrogen Fluoride		Fluoride compounds	N/A	42	27	21	18	17	18	41	56	✓	✓	30.0	371
	Nickel subsulphide	12035-72-2			Nickel subsulphide	12035-72-2	26	32	18	18	38	18	40	98	✓	✓	36.0	362
	Toluene (methylbenzene)	108-88-3			Toluene (methylbenzene)	108-88-3	90	33	34	18	17	18	26	42	✓	✓	34.8	363
	Toluene-2,4-diisocyanate	584-84-9	*		Toluene-2,4-diisocyanate	584-84-9	93	34	36	56	38	82	34	42		✓	51.9	352
	Mercury and compounds	7439-97-6			Mercury and compounds	7439-97-6	35	35	20	1	1	1	52	105	✓	✓	31.3	368
1,2-	Dibromoethane	106-93-4		1,2-	Dibromoethane	106-93-4	26	36	24	56	95	56	41	51	✓	✓	48.1	355
	Hydrogen sulphide	7783-06-4			Hydrogen sulphide	7783-06-4	54	37	25	1	1	1	24	21	✓	✓	20.5	379
	Phosphoric acid^^^	7664-38-2			Phosphoric acid^^^	7664-38-2	126	38	50	132	109	131	32	28		✓	80.8	317
	Hydrochloric acid^^^	7647-01-0			Hydrochloric acid^^^	7647-01-0	134	39	72	56	38	82	31	28			60.0	341
	Copper and compounds	7440-50-8			Copper and compounds	7440-50-8	126	40	44	56	38	56	54	117	✓	✓	66.4	334
	Chlorine dioxide	10049-04-4			Chlorine dioxide	10049-04-4	69	40	29	56	38	56	38	105	✓	✓	53.9	350
	Chlorine	7782-50-5			Chlorine	7782-50-5	126	42	42	1	1	1	27	14	✓	✓	31.8	366
	Nitric acid^^^	7697-37-2			Nitric acid^^^	7697-37-2	134	42	54	56	38	82	46	14			58.3	344
4,4-	Methylene bis 2,4 aniline (MOCA)	101-14-4	*	4,4-	Methylene bis 2,4 aniline (MOCA)	101-14-4	21	44	26	56	95	56	34	35	✓		45.9	358
	Ammonia (total)	7664-41-7			Ammonia (total)	7664-41-7	143	45	49	17	17	17	27	13	✓	✓	41.0	360
	Ethylene oxide	75-21-8			Ethylene oxide	75-21-8	42	46	37	56	38	82	44	28		✓	46.6	357
	Magnesium oxide fume	1309-48-4			Magnesium oxide fume	1309-48-4	170	47	74	132	109	131	46	42			93.9	304
	Zinc and compounds	7440-66-6			Zinc and compounds	7440-66-6	134	48	59	56	38	82	57	98			71.5	326
	Acrylic acid	79-10-7	2-Propenoic acid		Acrylic acid	79-10-7	147	49	55	56	38	82	57	56		✓	67.5	331
	Phenol	108-95-2			Phenol	108-95-2	147	49	67	56	38	82	56	56			68.9	330
	Styrene (ethenylbenzene)	100-42-5			Styrene (ethenylbenzene)	100-42-5	147	49	55	56	38	82	57	56		✓	67.5	331
	Boron and compounds	7440-42-8			Boron and compounds	7440-42-8	147	49	67	18	17	18	91	56	✓		57.9	346
	Biphenyl (1,1-biphenyl)	92-52-4			Biphenyl (1,1-biphenyl)	92-52-4	34	53	40	55	109	55	44	35			53.1	351
	Nickel and compounds (not carbony	7440-02-0			Nickel and compounds (not carbon	7440-02-0	176	54	74	18	17	18	94	138	✓	✓	73.6	323
	Formaldehyde (methyl aldehyde)	50-00-0			Formaldehyde (methyl aldehyde)	50-00-0	147	55	51	18	17	18	46	98	✓	✓	56.3	348
	Carbon disulphide	75-15-0			Carbon disulphide	75-15-0	147	56	59	56	38	82	72	98		✓	76.0	321

prefix	Substance Name	CAS No																
	Count					**Options**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Ave**	
						Count	390	390	390	390	390	390	390	390	82	55		
	Acetonitrile	75-05-8			Acetonitrile	75-05-8	147	56	59	132	131	131	72	98		✓	103.3	287
	Acetaldehyde	75-07-0			Acetaldehyde	75-07-0	143	58	48	56	38	56	62	105	✓	✓	70.8	328
	Methylenebis (phenylisocyanate)	101-68-8	*		Methylenebis (phenylisocyanate)	101-68-8	143	58	67	56	38	56	69	105	✓		74.0	322
	Chromium (III) compounds	7440-47-3			Chromium (III) compounds	7440-47-3	121	60	43	56	95	56	65	137	✓	✓	79.1	319
1,1,2-	Trichloroethane	79-00-5		1,1,2-	Trichloroethane	79-00-5	176	61	71	56	38	56	74	245	✓	✓	97.1	300
	Ethyl acetate	141-78-6			Ethyl acetate	141-78-6	203	62	112	233	147	197	51	138			142.9	254
	Acrylonitrile (2-propenenitrile)	107-13-1			Acrylonitrile (2-propenenitrile)	107-13-1	170	62	67	132	109	131	82	105		✓	107.3	283
	Cyclohexane	110-82-7			Cyclohexane	110-82-7	203	64	92	132	109	131	64	56			106.4	284
	Vinyl chloride monomer	75-01-4	Chloroethene		Vinyl chloride monomer	75-01-4	126	65	63	56	38	82	75	79		✓	73.0	324
	Chloroform (trichloromethane)	67-66-3			Chloroform (trichloromethane)	67-66-3	196	66	78	56	38	82	94	105		✓	89.4	309
2-	Ethylhexyl phthalate (DEHP)	117-81-7	*	2-	Ethylhexyl phthalate (DEHP)	117-81-7	196	66	73	56	38	56	63	105	✓	✓	81.6	316
	Dibutyl phthalate	84-74-2	1,2-Benzenedicarboxylic acid ,dibutyl ester		Dibutyl phthalate	84-74-2	196	66	83	132	109	131	82	105			113.0	272
	Aniline (benzenamine)	62-53-3			Aniline (benzenamine)	62-53-3	35	69	31	1	1	1	39	42	✓		27.4	375
	Cumene (1-methylethylbenzene)	98-82-8			Cumene (1-methylethylbenzene)	98-82-8	222	70	87	233	147	188	94	247		✓	161.0	223
	Chloroethane (ethyl chloride)	75-00-3			Chloroethane (ethyl chloride)	75-00-3	54	71	35	125	143	82	94	42			80.8	317
	Organo-tin compounds ++	N/A			Organo-tin compounds ++	N/A	147	71	65	18	17	18	139	245	✓	✓	90.0	307
2-	Methoxyethanol	109-86-4		2-	Methoxyethanol	109-86-4	203	73	201	329	208	212	34	40			162.5	220
2-	Methoxyethanol acetate	110-49-6		2-	Methoxyethanol acetate	110-49-6	203	73	201	329	208	212	34	40			162.5	220
	Manganese and compounds	7439-96-5			Manganese and compounds	7439-96-5	196	75	77	18	17	18	128	247	✓	✓	97.0	301
	Beryllium and compounds	7440-41-7			Beryllium and compounds	7440-41-7	58	75	38	18	38	18	90	49	✓		48.0	356
1,2-	Dichloroethane	107-06-2		1,2-	Dichloroethane	107-06-2	176	77	76	132	131	129	94	138	✓	✓	119.1	268
	Benzene hexachloro- (HCB) +	608-73-1			Benzene hexachloro- (HCB) +	608-73-1	38	78	51	132	169	131	57	51			88.4	311
	Chlorophenols (di, tri, tetra) ++	N/A			Chlorophenols (di, tri, tetra) ++	N/A	42	79	39	132	169	131	50	51			86.6	314
	Acrylamide	79-06-1	2-Propenamide		Acrylamide	79-06-1	93	80	44	56	95	56	69	247	✓		92.5	305
	Acetic acid (ethanoic acid)	64-19-7			Acetic acid (ethanoic acid)	64-19-7	201	81	84	56	38	82	128	28		✓	87.3	312
	Ethyl butyl ketone	106-35-4	*		Ethyl butyl ketone	106-35-4	203	82	112	56	38	82	128	138			104.9	285
	Polychlorinated dioxins and furans	N/A			Polychlorinated dioxins and furans	N/A	122	83	107	56	38	82	82	42			76.5	320
	Antimony and compounds	7440-36-0			Antimony and compounds	7440-36-0	254	84	103	132	109	131	163	323		✓	162.4	222
	Selenium and compounds	7782-49-2			Selenium and compounds	7782-49-2	125	85	62	56	95	56	144	255	✓		109.8	282
1,1,2,2-	Tetrachloroethane	79-34-5		1,1,2,2-	Tetrachloroethane	79-34-5	9	86	33	132	169	131	46	56			82.8	315
	Ethylbenzene	100-41-4			Ethylbenzene	100-41-4	286	86	125	132	109	131	108	268			155.6	234
	Ethanol	64-17-5			Ethanol	64-17-5	224	86	90	56	38	56	108	138	✓	✓	99.5	292
n-	Hexane	110-54-3		n-	Hexane	110-54-3	172	86	79	1	1	1	66	38	✓		55.5	349
	Triethylamine	121-44-8	*		Triethylamine	121-44-8	96	90	58	132	169	131	91	51			102.3	289
	Hydrogen cyanide	74-90-8			Hydrogen cyanide	74-90-8	222	91	119	228	147	183	120	35			143.1	253
	Creosote	8001-58-9			Creosote	8001-58-9	293	92	134	56	38	82	120	325			142.5	255
	Methyl mercaptan	74-93-1	Methanethiol		Methyl mercaptan	74-93-1	203	92	91	18	38	18	195	256	✓		113.9	271
	Aldrin +	309-00-2	*		Aldrin +	309-00-2	24	94	44	1	1	1	52	56	✓		34.1	365
	Phosgene	75-44-5	Carbonic dichloride		Phosgene	75-44-5	71	94	51	56	95	56	82	55	✓		70.0	329
	Methyl tert-butyl ether	1634-04-4	*		Methyl tert-butyl ether	1634-04-4	256	96	106	125	143	82	182	242			154.0	235
	Heptachlor #	76-44-8			Heptachlor #	76-44-8	26	97	55	18	17	18	57	56	✓		43.0	359
	Asbestos ^	1332-21-4			Asbestos ^	1332-21-4	196	97	92	56	38	82	145	247			119.1	268
	Aluminium (fume and dust)	7429-90-5			Aluminium (fume and dust)	7429-90-5	258	99	116	18	17	18	216	267	✓		126.1	266
	Barium and compounds	7440-39-3			Barium and compounds	7440-39-3	292	100	132	132	131	131	204	323			180.6	195
1,1,1,2-	Tetrachloroethane	630-20-6		1,1,1,2-	Tetrachloroethane	630-20-6	286	101	120	132	109	131	190	328		✓	174.6	202
	Epichlorohydrin (chloromethylox)	106-89-8			Epichlorohydrin (chloromethylox)	106-89-8	220	102	108	56	38	82	164	247			127.1	265
	Benzoyl chloride	98-88-4			Benzoyl chloride	98-88-4	220	102	92	125	143	82	186	247			149.6	243
	Toluene-2,6-diisocyanate	91-08-7			Toluene-2,6-diisocyanate	91-08-7	259	104	122	132	131	131	182	244			163.1	218
n-	Propanol	71-23-8		n-	Propanol	71-23-8	259	104	124	132	131	131	118	38			129.6	262
	Chlorpyrifos	2921-88-2	*		Chlorpyrifos	2921-88-2	73	106	92	18	17	18	94	56	✓		59.3	342
	Methyl bromide ^	74-83-9			Methyl bromide ^	74-83-9	73	106	92	18	17	18	94	56	✓		59.3	342
	Acetylene (ethyne)	74-86-2			Acetylene (ethyne)	74-86-2	296	106	143	56	38	82	221	327			158.6	227
n-	Pentane	109-66-0		n-	Pentane	109-66-0	296	106	144	132	109	131	165	138			152.6	237
	Propylene oxide (methyloxirane)	75-56-9			Propylene oxide (methyloxirane)	75-56-9	255	106	111	56	95	56	205	325	✓		151.1	238
	Crotonaldehyde (2-butenal)	4170-30-3			Crotonaldehyde (2-butenal)	4170-30-3	73	106	81	132	169	131	82	56			103.8	286
	Vinylidene chloride	75-35-4	Ethene,1,1-dichloro		Vinylidene chloride	75-35-4	256	106	114	228	147	131	161	247			173.8	203

prefix	Substance Name	CAS No																
	Count					**Options**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Ave**	
						Count	390	390	390	390	390	390	390	390	82	55		
1,4-	Dioxane	123-91-1		1,4-	Dioxane	123-91-1	327	113	140	233	147	188	195	336			209.9	140
o-	Toluidine	95-53-4	*	o-	Toluidine	95-53-4	96	114	80	56	147	82	66	56			87.1	313
	Acetone cyanohydrin	75-86-5	Propanenitrile , 2-hydroxy-2-methyl-		Acetone cyanohydrin	75-86-5	96	114	82	56	147	82	75	56			88.5	310
	Tribromomethane (bromoform)	75-25-2			Tribromomethane (bromoform)	75-25-2	99	116	85	233	193	188	139	138			148.9	244
	Picric acid (2,4,6-trinitrophenol)	88-89-1			Picric acid (2,4,6-trinitrophenol)	88-89-1	224	117	117	233	193	197	190	256			190.9	170
1,2-	Diphenylhydrazine	122-66-7		1,2-	Diphenylhydrazine	122-66-7	134	118	104	56	147	82	103	56			100.0	290
	Molybdenum trioxide	1313-27-5			Molybdenum trioxide	1313-27-5	134	118	104	56	147	82	103	56			100.0	290
n-	Butyl alcohol	71-36-3		n-	Butyl alcohol	71-36-3	341	120	167	331	193	208	190	328			234.8	84
	Fenitrothion	122-14-5	*		Fenitrothion	122-14-5	147	121	147	56	38	82	145	56			99.0	295
S-	Bioallethrin	28434-00-6	*	S-	Bioallethrin	28434-00-6	147	121	147	56	38	82	145	56			99.0	295
	Maleic anhydride	108-31-6	*		Maleic anhydride	108-31-6	293	123	136	125	143	82	195	247			168.0	207
	Ethyl acrylate (2-propenoic acid)	140-88-5			Ethyl acrylate (2-propenoic acid)	140-88-5	293	123	136	18	17	18	245	330	✓		147.5	245
	Dieldrin +	60-57-1	2,7:3,6-Dimethanonaphth*		Dieldrin +	60-57-1	12	125	64	18	38	18	43	79	✓		49.6	354
	Thiourea	62-56-6			Thiourea	62-56-6	90	126	88	132	169	131	139	242			139.6	256
2,4-	Dinitrotoluene	121-14-2	*	2,4-	Dinitrotoluene	121-14-2	90	126	88	56	147	82	91	77			94.6	303
2-	Butoxyethanol	111-76-2		2-	Butoxyethanol	111-76-2	334	128	201	132	109	212	108	138			170.3	206
	Diacetone alcohol	123-42-2	*		Diacetone alcohol	123-42-2	341	128	159	132	109	131	238	338			197.0	156
	Methamidophos	10265-92-6	*		Methamidophos	10265-92-6	176	128	108	1	1	1	103	56	✓		71.8	325
	Hexachlorobutadiene	87-68-3			Hexachlorobutadiene	87-68-3	176	128	115	132	169	131	118	56			128.1	264
	Phthalic anhydride	85-44-9	1,3-Isobenzofurandione		Phthalic anhydride	85-44-9	327	132	145	56	38	56	245	376	✓		171.9	205
	Diethylamine	109-89-7	*		Diethylamine	109-89-7	201	133	117	18	17	18	205	56	✓		95.6	302
	Chloromethane (methyl chloride)	74-87-3			Chloromethane (methyl chloride)	74-87-3	203	134	120	18	17	18	195	268	✓		121.6	267
	Phosphamidon	13171-21-6			Phosphamidon	13171-21-6	26	135	85	18	38	18	66	79	✓		58.1	345
2,6-	Dinitrotoluene	606-20-2	*	2,6-	Dinitrotoluene	606-20-2	143	136	110	56	147	82	182	77			116.6	270
	Pyridine	110-86-1			Pyridine	110-86-1	346	136	166	228	147	183	239	376			227.6	102
	Cyclohexanone	108-94-1			Cyclohexanone	108-94-1	348	138	171	132	109	131	245	338			201.5	150
	Coumaphos	56-72-4	Phosphorothioic acid O-(3-chloro-4methyl-2-oxo-2H*)		Coumaphos	56-72-4	42	138	92	18	38	18	75	79	✓		62.5	336
	Monocrotophos	6923-22-4	*		Monocrotophos	6923-22-4	42	138	92	18	38	18	75	79	✓		62.5	336
	Fensulfothlan	115-90-2	*		Fensulfothlan	115-90-2	42	138	92	18	38	18	75	79	✓		62.5	336
	Disulfoton	298-04-4	*		Disulfoton	298-04-4	42	138	92	18	38	18	75	79	✓		62.5	336
	Methidathion	950-37-8	*		Methidathion	950-37-8	42	138	92	18	38	18	75	79	✓		62.5	336
1,2-	Dichloro-(E)-ethene	156-60-5		1,2-	Dichloro-(E)-ethene	156-60-5	224	138	125	233	193	188	260	268			203.6	147
	Hexachloroethane	67-72-1			Hexachloroethane	67-72-1	339	145	157	328	192	197	245	336			242.4	73
1,2,4-	Trimethylbenzene	25551-13-7		1,2,4-	Trimethylbenzene	25551-13-7	334	146	156	132	131	129	221	256	✓		188.1	174
	Methyl amine (methanamine)	74-89-5			Methyl amine (methanamine)	74-89-5	265	147	133	233	193	188	205	268			204.0	146
	Cyclohexanol	108-93-0			Cyclohexanol	108-93-0	348	148	170	331	193	208	278	378			256.8	45
	Methyl acrylate	96-33-3	*		Methyl acrylate	96-33-3	346	149	165	56	38	82	276	381			186.6	175
	Pirimiphos-ethyl	23505-41-1	*		Pirimiphos-ethyl	23505-41-1	99	150	125	56	95	56	120	79	✓		97.5	297
	Oxydemeton-methyl	301-12-2			Oxydemeton-methyl	301-12-2	99	150	125	56	95	56	120	79	✓		97.5	297
	Leptophos	21609-90-5	*		Leptophos	21609-90-5	99	150	125	56	95	56	120	79	✓		97.5	297
	Ethanolamine	141-43-5			Ethanolamine	141-43-5	378	150	183	132	109	131	260	338			210.1	139
	Dimethylamine (methanamine)	124-40-3			Dimethylamine (methanamine)	124-40-3	286	150	160	132	109	131	239	268			184.4	178
	Hydroxylamine sulphate (1:1)	10046-00-1			Hydroxylamine sulphate (1:1)	10046-00-1	134	155	135	18	38	18	139	79	✓		89.5	308
	Isophorone	78-59-1	2-Cyclohexen-1-one,3,5,5-trimethyl		Isophorone	78-59-1	296	156	158	233	193	197	298	331			232.8	85
	Methyl propyl ketone (MPK)	107-87-9	*		Methyl propyl ketone (MPK)	107-87-9	373	157	173	331	210	208	302	379			266.6	24
	Diazinon	333-41-5	*		Diazinon	333-41-5	172	158	174	132	131	131	186	79			145.4	250
	Dichlofenthion	97-17-6	*		Dichlofenthion	97-17-6	172	158	174	132	131	131	186	79			145.4	250
	Demeton	8065-48-3			Demeton	8065-48-3	203	160	138	18	38	18	139	79	✓		99.1	293
3,3-	Dichlorobenzidine	91-94-1	[1,1-Biphenyl]-4,4-diamine	3,3-	Dichlorobenzidine	91-94-1	69	161	125	228	216	197	106	105			150.9	239
	Bromochloromethane	74-97-5			Bromochloromethane	74-97-5	341	162	168	233	193	188	302	383			246.3	64
bis-(2-	Chloro-1-methylethyl) ether	108-60-1		bis-(2-	Chloro-1-methylethyl) ether	108-60-1	93	163	123	125	210	183	145	266			163.5	217
	Demeton-O	298-03-3			Demeton-O	298-03-3	259	164	147	18	38	18	158	79	✓		110.1	277
	Hydroxylamine hydrochloride	5470-11-1			Hydroxylamine hydrochloride	5470-11-1	259	164	147	18	38	18	158	79	✓		110.1	277
	Tetraethyl pyrophosphate (TEPP)	107-49-3			Tetraethyl pyrophosphate (TEPP	107-49-3	259	164	147	18	38	18	158	79	✓		110.1	277
	Titanium tetrachloride	7550-45-0			Titanium tetrachloride	7550-45-0	348	164	183	331	210	208	300	268			251.5	51
	Benzidine	29398-96-7	*		Benzidine	29398-96-7	122	164	141	125	210	183	120	105			146.3	247

prefix	Substance Name	CAS No																
	Count					**Options**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Ave**	
						Count	390	390	390	390	390	390	390	390	82	55		
	Chloromethyl methyl ether	107-30-2	*		Chloromethyl methyl ether	107-30-2	122	164	141	125	210	183	120	105			146.3	247
	Vinyl toluene	25013-15-4	*		Vinyl toluene	25013-15-4	348	170	180	233	193	188	322	383			252.1	50
	Aluminium oxide (fibrous form)	1344-28-1			Aluminium oxide (fibrous form)	1344-28-1	339	171	169	233	193	188	312	380			248.1	63
	Chlorobenzenes (di, tri, tetra) ++	N/A			Chlorobenzenes (di, tri, tetra) ++	N/A	374	172	189	132	169	131	352	331			231.3	88
	Omethoate	1113-02-6	*		Omethoate	1113-02-6	329	173	174	56	95	56	217	79	✓		147.4	246
	Arsine	7784-42-1			Arsine	7784-42-1	23	173	125	56	147	82	69	118			99.1	293
	Triphenyltin acetate	900-95-8	*		Triphenyltin acetate	900-95-8	26	175	138	56	147	82	82	118			103.0	288
	EPN	2104-64-5			EPN	2104-64-5	59	176	147	56	147	82	108	118			111.6	273
	Dicrotophos	141-66-2	*		Dicrotophos	141-66-2	59	176	147	56	147	82	108	118			111.6	273
	Parathion	56-38-2	Phosphorothioic acid O,O-diethyl O-(4-nitrophenyl)ester.		Parathion	56-38-2	59	176	147	56	147	82	108	118			111.6	273
	Chlorfenvinphos	470-90-6	*		Chlorfenvinphos	470-90-6	59	176	147	56	147	82	108	118			111.6	273
	Nitrobenzene	98-95-3			Nitrobenzene	98-95-3	72	180	146	132	169	131	161	256			155.9	233
	Dinoseb	88-85-7	Phenol,2-(1-methylpropyl)-4,6-dinitro-		Dinoseb	88-85-7	73	181	160	132	169	131	128	118			136.5	258
	Amines, polyethylenepoly-	68131-73-7			Amines, polyethylenepoly-	68131-73-7	73	181	160	132	169	131	128	118			136.5	258
m-	Phenylenediamine	108-45-2	*	m-	Phenylenediamine	108-45-2	73	181	160	132	169	131	128	118			136.5	258
p-	Diaminobenzene	106-50-3	*	p-	Diaminobenzene	106-50-3	73	181	160	132	169	131	128	118			136.5	258
	Butyl mercaptan	54812-86-1			Butyl mercaptan	54812-86-1	385	185	198	233	147	188	362	268			245.8	65
	Phosalone	2310-17-0	*		Phosalone	2310-17-0	126	186	174	132	169	131	165	118			150.1	240
	Carbophenothion	786-19-6	*		Carbophenothion	786-19-6	126	186	174	132	169	131	165	118			150.1	240
	Bromophos-ethyl	4824-78-6	*		Bromophos-ethyl	4824-78-6	126	186	174	132	169	131	165	118			150.1	240
	Silver and compounds	7440-22-4			Silver and compounds	7440-22-4	389	189	199	132	131	131	366	385			240.3	75
	Tetraethylenepentamine	112-57-2	*		Tetraethylenepentamine	112-57-2	168	190	171	132	169	131	219	256			179.5	196
	Phenylhydrazine	100-63-0			Phenylhydrazine	100-63-0	168	190	182	132	169	131	182	118			159.0	226
	Amitrole	61-82-5	1H-1,2,4-Triazol-3-amine		Amitrole	61-82-5	176	192	180	56	147	82	232	256			165.1	216
	Thallium and compounds	7440-28-0			Thallium and compounds	7440-28-0	345	193	194	228	216	197	351	105			228.6	100
	Crufomate	299-86-5			Crufomate	299-86-5	203	194	190	233	193	197	221	118			193.6	165
2,4-	Dichlorophenol	120-83-2		2,4-	Dichlorophenol	120-83-2	203	194	187	132	169	131	245	256			189.6	172
	Demeton-S-methyl	919-86-8	*		Demeton-S-methyl	919-86-8	203	194	187	132	169	131	245	256			189.6	172
2,4,5-	Trichlorophenol	95-95-4		2,4,5-	Trichlorophenol	95-95-4	203	194	190	233	193	197	221	118			193.6	165
	Diethylene diamine	110-85-0	*		Diethylene diamine	110-85-0	252	198	183	132	169	131	295	333			211.6	137
	Triethylenetetramine	112-24-3	*		Triethylenetetramine	112-24-3	252	198	183	132	169	131	295	333			211.6	137
	Cycloexyldimethoxymethylsilane	17865-32-6			Cycloexyldimethoxymethylsilane	17865-32-6	286	200	193	233	193	197	302	256			232.5	86
m-	Diaminobenzene	108-42-2		m-	Diaminobenzene	108-42-2	286	200	201	331	210	212	280	118			229.8	99
Bis(	Hydroxylammonium) sulphate	10039-54-0	*	Bis(	Hydroxylammonium) sulphate	10039-54-0	341	202	190	56	147	82	244	118			172.5	204
1,1,1-	Trichloroethane	71-55-6		1,1,1-	Trichloroethane	71-55-6	390	202	200	132	109	131	384	386			241.8	74
rt-pentyl-2-	Benzothiazolesulfenamide	110799-28-6		N-tert-pentyl-2-	Benzothiazolesulfenamide	110799-28-6	348	204	197	132	169	131	367	333			235.1	83
	Resorcinol	108-46-3	*		Resorcinol	108-46-3	380	205	195	233	193	197	301	118			227.8	101
(3,5-di-tert-	Butylsalicilato-O1,O2)zinc	42405-40-3	*	bis(3,5-di-tert-	Butylsalicilato-O1,O2)zinc	42405-40-3	380	205	195	233	193	197	385	382			271.3	20
	Dimethylnitrosamine	62-75-9	Methanamine ,N-methyl-N-nitroso		Dimethylnitrosamine	62-75-9	38	207	201	132	218	212	137	138			160.4	224
	Ethyleneimine	151-56-4	*		Ethyleneimine	151-56-4	99	207	201	132	218	212	195	138			175.3	199
	Hexanitrodiphenylamine	131-73-7			Hexanitrodiphenylamine	131-73-7	99	207	201	132	218	212	195	138			175.3	199
	Dinitrobenzene (mixed isomers)	25154-54-5			Dinitrobenzene (mixed isomers)	25154-54-5	42	207	201	132	218	212	108	138			157.3	228
4-	Methoxy-2-nitroaniline	96-96-8	*	4-	Methoxy-2-nitroaniline	96-96-8	176	207	201	132	218	212	280	138			195.5	159
2-	Butylamine	13952-84-6	*	2-	Butylamine	13952-84-6	285	207	201	132	218	212	220	138			201.6	149
	Hexanitrodiphenylamine	2844-92-0			Hexanitrodiphenylamine	2844-92-0	147	207	201	132	218	212	232	138			185.9	176
	Phosacetim	4104-14-7			Phosacetim	4104-14-7	73	207	201	132	218	212	145	138			165.8	208
	Fanofos	944-22-9			Fanofos	944-22-9	73	207	201	132	218	212	145	138			165.8	208
	Dialifos	10311-84-9			Dialifos	10311-84-9	73	207	201	132	218	212	145	138			165.8	208
	Endrin +	72-20-8	2,7:3,6-Dimethanonaphth*		Endrin +	72-20-8	73	207	201	132	218	212	145	138			165.8	208
	Hexachlorocyclopentadiene	77-47-4			Hexachlorocyclopentadiene	77-47-4	73	207	201	132	218	212	145	138			165.8	208
	Hexachlorobenzene +	118-74-1			Hexachlorobenzene +	118-74-1	38	207	201	132	218	212	106	138			156.5	232
	Dichlorodiphenyltrichloroethane (DD	50-29-3	Benzene,1,1-(2,2,2-trichloroethylidene)bis [4-chloro-]		Dichlorodiphenyltrichloroethane (DD	50-29-3	67	207	201	132	218	212	128	138			162.9	219
o-	Ethylhydroxylamine	624-86-2		o-	Ethylhydroxylamine	624-86-2	296	207	201	132	218	212	232	138			204.5	144
1,3-	Dichloropropene	542-75-6		1,3-	Dichloropropene	542-75-6	99	207	201	233	218	212	165	138			184.1	179
2-	Methyl-4-phenylpentanol	92585-24-5	*	2-	Methyl-4-phenylpentanol	92585-24-5	176	207	201	233	218	212	245	268			220.0	121
	Heptachlor epoxide +	1024-57-3	*		Heptachlor epoxide +	1024-57-3	73	207	201	233	218	212	145	138			178.4	197

prefix	Substance Name	CAS No															
	Count					Options	1	2	3	4	5	6	7	8	9	10	Ave	
						Count	390	390	390	390	390	390	390	390	82	55		
p-	Nitroaniline	100-00-6		p-	Nitroaniline	100-00-6	265	207	201	233	218	212	323	338			249.6	52
N-	Methylaniline	100-61-8	*	N-	Methylaniline	100-61-8	99	207	201	233	218	212	165	138			184.1	179
3,5-	Dichloro-2,4-difluorobenzoyl fl**	101513-70-6		3,5-	Dichloro-2,4-difluorobenzoyl fl**	101513-70-6	265	207	201	233	218	212	323	338			249.6	52
3-(Bis(2-	Ethylexyl)aminomethyl)benzoth**	105254-85-1		3-(Bis(2-	Ethylexyl)aminomethyl)benzoth**	105254-85-1	99	207	201	233	218	212	165	138			184.1	179
2-	Piperazin-1-ylethylamine	140-31-4		2-	Piperazin-1-ylethylamine	140-31-4	265	207	201	233	218	212	323	338			249.6	52
	Isophorone diamine	2855-13-2	*		Isophorone diamine	2855-13-2	265	207	201	233	218	212	323	338			249.6	52
m-	Phenylenediamine dihydrochlor**	541-69-5		m-	Phenylenediamine dihydrochlor**	541-69-5	99	207	201	233	218	212	165	138			184.1	179
3-	Chloro-2-methylpropene	563-47-3		3-	Chloro-2-methylpropene	563-47-3	176	207	201	233	218	212	245	268			220.0	121
2,5-	Diaminotoluene sulphate	615-50-9	*	2,5-	Diaminotoluene sulphate	615-50-9	99	207	201	233	218	212	165	138			184.1	179
N-	Methyl-p-toluidine	623-08-5		N-	Methyl-p-toluidine	623-08-5	265	207	201	233	218	212	323	338			249.6	52
N,N-bis(2-	Ethylexyl)-((1,2,4-triazol-1-yl)**	91273-04-0	*	N,N-bis(2-	Ethylexyl)-((1,2,4-triazol-1-yl)**	91273-04-0	176	207	201	233	218	212	245	268			220.0	121
o-	Diaminobenzene	95-54-5		o-	Diaminobenzene	95-54-5	99	207	201	233	218	212	165	138			184.1	179
1-	Amino-3-nitrobenzene	99-09-2		1-	Amino-3-nitrobenzene	99-09-2	265	207	201	233	218	212	323	338			249.6	52
p-	Nitrotoluene	99-99-0	*	p-	Nitrotoluene	99-99-0	176	207	201	233	218	212	245	268			220.0	121
2-	Propen-1-ol	107-18-6		2-	Propen-1-ol	107-18-6	348	207	201	233	218	212	283	138			230.0	95
	Ethyl chloroacetate	105-39-5			Ethyl chloroacetate	105-39-5	348	207	201	233	218	212	283	138			230.0	95
	Benzyl-2-hydroxydodecyldime**	113694-52-3			Benzyl-2-hydroxydodecyldime**	113694-52-3	147	207	201	233	218	212	205	138			195.1	160
C12-14-tert-	Alkylamine, methylphosphonic **	119415-07-5		C12-14-tert-	Alkylamine, methylphosphonic **	119415-07-5	224	207	201	233	218	212	283	268			230.8	89
2,6-	Dichloro-4-nitroanisole	17742-69-7		2,6-	Dichloro-4-nitroanisole	17742-69-7	224	207	201	233	218	212	283	268			230.8	89
	Mecarbam	2595-54-2			Mecarbam	2595-54-2	147	207	201	233	218	212	205	138			195.1	160
	Chloroacetic acid	79-11-8			Chloroacetic acid	79-11-8	348	207	201	233	218	212	283	138			230.0	95
3-(3-	Methylpent-3-yl)isoxazol-5-yla**	82560-06-3		3-(3-	Methylpent-3-yl)isoxazol-5-yla**	82560-06-3	296	207	201	233	218	212	358	338			257.9	42
3,3'-	Dichlorobenzidine, salts of	612-83-9	*	3,3'-	Dichlorobenzidine, salts of	612-83-9	134	207	201	233	218	212	190	138			191.6	168
4,4'-	Methylenedi-o-toluidine	838-88-0		4,4'-	Methylenedi-o-toluidine	838-88-0	134	207	201	233	218	212	190	138			191.6	168
2-	Naphthylamine	91-59-8		2-	Naphthylamine	91-59-8	224	207	201	18	38	18	283	268	✓		157.1	231
S-	Benzyl N,N-dipropylthiocarbamate	52888-80-9		S-	Benzyl N,N-dipropylthiocarbamate	52888-80-9	224	207	201	132	218	212	283	268			218.1	132
	Bromobenzylbromotoluene mix**	99688-47-8			Bromobenzylbromotoluene mix**	99688-47-8	147	207	201	132	218	212	205	138			182.5	192
2-	Naphthylamine, salts of	553-00-4		2-	Naphthylamine, salts of	553-00-4	265	207	201	56	95	56	302	268	✓		181.3	194
	Isobutyl 3,4-epoxybutyrate	100181-71-3			Isobutyl 3,4-epoxybutyrate	100181-71-3	176	207	201	233	218	212	221	138			200.8	151
3,3'-	Dimethylbenzidine, salts of	612-82-8		3,3'-	Dimethylbenzidine, salts of	612-82-8	265	207	201	233	218	212	302	268			238.3	76
6-	Methyl-2,4-bis(methylthio)phen**	106264-79-3	*	6-	Methyl-2,4-bis(methylthio)phen**	106264-79-3	176	207	201	233	218	212	221	138			200.8	151
	Benzothiazole-2-thiol	149-30-4			Benzothiazole-2-thiol	149-30-4	176	207	201	233	218	212	221	138			200.8	151
4-	Chloro-3-methylphenol	59-50-7	Phenol,4-chloro-3-methyl-	4-	Chloro-3-methylphenol	59-50-7	378	207	201	233	218	212	302	138			236.1	81
Bis(2-	Ethylexyl)dithiodiacetate	62268-47-7	*	Bis(2-	Ethylexyl)dithiodiacetate	62268-47-7	265	207	201	233	218	212	302	268			238.3	76
	Mirex ##	2385-85-5	*		Mirex ##	2385-85-5	176	207	201	331	218	212	221	138			213.0	134
	Chlordane #	57-74-9			Chlordane #	57-74-9	203	207	201	56	38	82	239	138			145.5	249
1,2-	Dichloroethylene	540-59-0		1,2-	Dichloroethylene	540-59-0	348	207	201	56	38	82	368	338			204.8	143
1,1-	Dichloroethane	75-34-3		1,1-	Dichloroethane	75-34-3	348	207	201	132	131	131	368	338			232.0	87
	Chlorobenzene	108-90-7			Chlorobenzene	108-90-7	296	207	201	132	131	131	334	268			212.5	135
1-	Naphthylamine	134-32-7		1-	Naphthylamine	134-32-7	296	207	201	132	131	131	334	268			212.5	135
	Pentachloronaphthalene	1321-64-8			Pentachloronaphthalene	1321-64-8	224	207	201	331	218	212	260	138			223.9	105
	Guazatine	13516-27-3			Guazatine	13516-27-3	224	207	201	331	218	212	260	138			223.9	105
3,5-	Dichloro-4-(1,1,2,2-tetrafluoro**	104147-32-2		3,5-	Dichloro-4-(1,1,2,2-tetrafluoro**	104147-32-2	224	207	201	331	218	212	260	138			223.9	105
p-	Chlorotoluene	106-43-4	*	p-	Chlorotoluene	106-43-4	296	207	201	331	218	212	334	268			258.4	27
3-	Chlorotoluene	108-41-8		3-	Chlorotoluene	108-41-8	296	207	201	331	218	212	334	268			258.4	27
	Chlorotoluene (mixed isomers)	25168-05-2	*		Chlorotoluene (mixed isomers)	25168-05-2	296	207	201	331	218	212	334	268			258.4	27
	Cyanophos	2636-26-2			Cyanophos	2636-26-2	224	207	201	331	218	212	260	138			223.9	105
2-(2-	Bromoethoxy)anisole	4463-59-6		2-(2-	Bromoethoxy)anisole	4463-59-6	348	207	201	331	218	212	368	338			277.9	7
3-	Aminophenol	591-27-5		3-	Aminophenol	591-27-5	296	207	201	331	218	212	334	268			258.4	27
	Pentachlorobenzene +	608-93-5			Pentachlorobenzene +	608-93-5	224	207	201	331	218	212	260	138			223.9	105
S-(1-	Methyl-1-phenylethyl)piperidin**	61432-55-1		S-(1-	Methyl-1-phenylethyl)piperidin**	61432-55-1	296	207	201	331	218	212	334	268			258.4	27
2-	Methyl-1-(4-methyltiophenyl)-2**	71868-10-5		2-	Methyl-1-(4-methyltiophenyl)-2**	71868-10-5	296	207	201	331	218	212	334	268			258.4	27
3-(2-(	Diaminomethyleneamino)thiazol**	76823-93-3		3-(2-(	Diaminomethyleneamino)thiazol**	76823-93-3	348	207	201	331	218	212	368	338			277.9	7
	Menazon	78-57-9			Menazon	78-57-9	348	207	201	331	218	212	368	338			277.9	7
2-	Amino-4,6-dinitrophenol	96-91-3		2-	Amino-4,6-dinitrophenol	96-91-3	348	207	201	331	218	212	368	338			277.9	7
kis(4,6-bis(	Butyl-(n-methyl-2,2,6,6-tetrame**	106990-43-6	*	etrakis(4,6-bis(	Butyl-(n-methyl-2,2,6,6-tetrame**	106990-43-6	329	207	201	233	218	212	353	268			252.6	46

prefix	Substance Name	CAS No																
	Count					Options	1	2	3	4	5	6	7	8	9	10	Ave	
						Count	390	390	390	390	390	390	390	390	82	55		
	Methylene dithiocyanate	6317-18-6	*		Methylene dithiocyanate	6317-18-6	386	207	201	233	218	212	353	138			243.5	72
Bis(4-	Dodecylphenyl)iodonium hexafl**	71786-70-4		Bis(4-	Dodecylphenyl)iodonium hexafl**	71786-70-4	374	207	201	233	218	212	380	338			270.4	21
1,5-	Naphthylenediamine	2243-62-1		1,5-	Naphthylenediamine	2243-62-1	286	207	201	331	218	212	295	138			236.0	82
	Diphenylamine	122-39-4	*		Diphenylamine	122-39-4	296	207	201	380	218	212	312	138			245.5	66
	Morphotion	144-41-2			Morphotion	144-41-2	296	207	201	380	218	212	312	138			245.5	66
(N-	Benzyl-N-ethyl)amino-3'-hyd…**	55845-90-4		(N-	Benzyl-N-ethyl)amino-3'-hyd…**	55845-90-4	348	207	201	380	218	212	362	268			274.5	17
	Methyl alpha-((4,6-dimethoxyp**	83055-99-6			Methyl alpha-((4,6-dimethoxyp**	83055-99-6	348	207	201	380	218	212	362	268			274.5	17
	Disodium 1-amino-4-(4-benzen**	85153-93-1	*		Disodium 1-amino-4-(4-benzen**	85153-93-1	382	207	201	380	218	212	386	338			290.5	4
	Hydroxylamine	7803-49-8			Hydroxylamine	7803-49-8	99	207	201	56	147	82	102	138			129.0	263
o-	Anisidine	90-04-0	Benzenamine ,2-methoxy	o-	Anisidine	90-04-0	38	207	201	132	218	212	137	138			160.4	224
3-	Chloropropene	107-05-1		3-	Chloropropene	107-05-1	42	207	201	132	218	212	108	138			157.3	228
2,4-	Dinitroaniline	97-02-9	*	2,4-	Dinitroaniline	97-02-9	99	207	201	132	218	212	195	138			175.3	199
	Fentin hydroxide	76-87-9	Stannane, hyroxytriphenyl-		Fentin hydroxide	76-87-9	73	207	201	132	218	212	145	138			165.8	208
	Isodrin +	465-73-6			Isodrin +	465-73-6	73	207	201	132	218	212	145	138			165.8	208
N-	Methyl-o-toluidine	611-21-2		N-	Methyl-o-toluidine	611-21-2	224	207	201	132	218	212	312	138			205.5	141
	Pentachloroethane	76-01-7			Pentachloroethane	76-01-7	134	207	201	132	218	212	217	268			198.6	155
1-	Dodecyl-2-pyrrolidone	2687-96-9		1-	Dodecyl-2-pyrrolidone	2687-96-9	99	207	201	233	218	212	165	138			184.1	179
	Chloroaniline (mixed isomers)	27134-26-5			Chloroaniline (mixed isomers)	27134-26-5	99	207	201	233	218	212	165	138			184.1	179
N-	Methyl-m-toluidine	696-44-6		N-	Methyl-m-toluidine	696-44-6	265	207	201	233	218	212	323	338			249.6	52
N,N-	Diethylaniline	91-66-7	Benzenamine ,N,N-diethyl-	N,N-	Diethylaniline	91-66-7	176	207	201	233	218	212	245	268			220.0	121
2-	Methyl-p-phenylenediamine	95-70-5	*	2-	Methyl-p-phenylenediamine	95-70-5	99	207	201	233	218	212	165	138			184.1	179
	Dicyclohexylamine	101-83-7			Dicyclohexylamine	101-83-7	147	207	201	56	95	56	205	138	✓		138.1	257
	Lindane +	58-89-9	Cyclohexane,1,2,3,4,5,6-hexachloro-*		Lindane +	58-89-9	147	207	201	233	218	212	205	138			195.1	160
1,1-	Dichloropropene	563-58-6		1,1-	Dichloropropene	563-58-6	296	207	201	233	218	212	358	338			257.9	42
4,4-	Benzidine (Diaminobiphenyl)	92-87-5		4,4-	Benzidine (Diaminobiphenyl)	92-87-5	147	207	201	132	218	212	205	138			182.5	192
N,N-	Dimethyl-2-(3-(4-chlorophenyl)**	10357-99-0		N,N-	Dimethyl-2-(3-(4-chlorophenyl)**	10357-99-0	224	207	201	132	218	212	283	268			218.1	132
	Dichlofluanid	1085-98-9	*		Dichlofluanid	1085-98-9	176	207	201	56	95	56	221	138	✓		143.8	252
1-	Methyl-3-nitro-1-nitrosoguanidin	70-25-7	*	1-	Methyl-3-nitro-1-nitrosoguanidin	70-25-7	265	207	201	233	218	212	302	268			238.3	76
3,3-	Dimethylbenzidine	119-93-7	*	3,3-	Dimethylbenzidine	119-93-7	265	207	201	233	218	212	302	268			238.3	76
2,4-di-tert-	Butylcyclohexanone	13019-04-0		2,4-di-tert-	Butylcyclohexanone	13019-04-0	296	207	201	331	218	212	334	268			258.4	27
2-	Bromo-2-nitropropane-1,3-diol	52-51-7		2-	Bromo-2-nitropropane-1,3-diol	52-51-7	224	207	201	331	218	212	260	138			223.9	105
	Dicyclopentadiene	77-73-6	4,7-Methano-1H-indene		Dicyclopentadiene	77-73-6	296	207	201	331	218	212	334	268			258.4	27
	Potassium-2-hydroxycarbazol**	96566-70-0			Potassium-2-hydroxycarbazol**	96566-70-0	348	207	201	331	218	212	368	338			277.9	7
4-	Aminophenol	123-30-8		4-	Aminophenol	123-30-8	203	207	201	331	218	212	239	138			218.6	129
	Benzyltributhylammonium 4-hy**	102561-46-6	*		Benzyltributhylammonium 4-hy**	102561-46-6	296	207	201	331	218	212	334	268			258.4	27
2-	Chloro-4-nitroaniline	121-87-9	*	2-	Chloro-4-nitroaniline	121-87-9	296	207	201	331	218	212	334	268			258.4	27
	Methylene dibromide	74-95-3			Methylene dibromide	74-95-3	348	207	201	331	218	212	368	338			277.9	7
Exo-(+/-)-1-	Methyl-2-(2-methylbenzyloxy)-**	87818-31-3		Exo-(+/-)-1-	Methyl-2-(2-methylbenzyloxy)-**	87818-31-3	296	207	201	331	218	212	334	268			258.4	27
3-(N-	Methyl-N-(4-methylamino-3-nit**	93633-79-5		3-(N-	Methyl-N-(4-methylamino-3-nit**	93633-79-5	348	207	201	331	218	212	368	338			277.9	7
o-	Chlorotoluene	95-49-8	Benzene,1-chloro-2-methyl	o-	Chlorotoluene	95-49-8	296	207	201	331	218	212	334	268			258.4	27
3-	Chloro-4,5,alpha,alpha,alpha-p**	77227-99-7		3-	Chloro-4,5,alpha,alpha,alpha-p**	77227-99-7	391	207	201	390	218	212	391	391			300.1	1
2'-(2-	Cyano-4,6-dinitrophenylazo)-5**	106359-94-8		2'-(2-	Cyano-4,6-dinitrophenylazo)-5**	106359-94-8	374	207	201	233	218	212	380	338			270.4	21
N-(4-(3-(4-	Cyanophenyl)ureido)-3-hydrox**	108673-51-4		N-(4-(3-(4-	Cyanophenyl)ureido)-3-hydrox**	108673-51-4	386	207	201	233	218	212	389	386			279.0	5
	Methyl 2-(3-nitrobenzylidene)**	39562-17-9			Methyl 2-(3-nitrobenzylidene)**	39562-17-9	259	207	201	233	218	212	280	138			218.5	131
	Methyl-2-(2-nitrobenzylidene)**	39562-27-1			Methyl-2-(2-nitrobenzylidene)**	39562-27-1	329	207	201	233	218	212	353	268			252.6	46
4,4'-	Oxibys(ethylenethio)diphenol	90884-29-0		4,4'-	Oxibys(ethylenethio)diphenol	90884-29-0	329	207	201	233	218	212	353	268			252.6	46
4,4'-	Isobutylethylidenediphenol	6807-17-6		4,4'-	Isobutylethylidenediphenol	6807-17-6	296	207	201	380	218	212	312	138			245.5	66
2(3-(	Prop-1-en-2-yl)phenyl)prop-2-**	2094-99-7	*	2(3-(	Prop-1-en-2-yl)phenyl)prop-2-**	2094-99-7	26	207	201	132	218	212	94	138			153.5	236
1,4-	Dichlorobut-2-ene	764-41-0		1,4-	Dichlorobut-2-ene	764-41-0	42	207	201	132	218	212	108	138			157.3	228
p-	Anisidine	104-94-9	*	p-	Anisidine	104-94-9	265	207	201	132	218	212	195	138			196.0	157
1,3-	Dichloro-5-ethyl-5-methylimida.**	89415-87-2		1,3-	Dichloro-5-ethyl-5-methylimida.**	89415-87-2	265	207	201	132	218	212	195	138			196.0	157
	Pentachlorophenol +	87-86-5			Pentachlorophenol +	87-86-5	59	207	201	1	1	1	120	138	✓		91.0	306
	Mephasfolan	950-10-7			Mephasfolan	950-10-7	147	207	201	132	218	212	232	138			185.9	176
	Isobenzan	297-78-9			Isobenzan	297-78-9	296	207	201	132	218	212	232	138			204.5	144
1,2-	Dibromo-3-chloropropane	96-12-8		1,2-	Dibromo-3-chloropropane	96-12-8	99	207	201	132	218	212	221	256			193.3	167
N,N-	Hydrazinodiacetic acid	19247-05-3		N,N-	Hydrazinodiacetic acid	19247-05-3	224	207	201	132	218	212	312	338			230.5	94

prefix	Substance Name	CAS No																
	Count					**Options**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Ave**	
						Count	390	390	390	390	390	390	390	390	82	55		
Z-1,3-	Dichloropropene	10061-01-5		Z-1,3-	Dichloropropene	10061-01-5	99	207	201	233	218	212	165	138			184.1	179
N,N-	Dimethyltoluidine	29526-93-7		N,N-	Dimethyltoluidine	29526-93-7	265	207	201	233	218	212	323	338			249.6	52
	Pentaethylenehexamine	4067-16-7	*		Pentaethylenehexamine	4067-16-7	99	207	201	233	218	212	165	138			184.1	179
p-	Phenylenediamine dihydrochlor**	624-18-0	*	p-	Phenylenediamine dihydrochlor**	624-18-0	99	207	201	233	218	212	165	138			184.1	179
	Benzyldimethylamine	103-83-3			Benzyldimethylamine	103-83-3	296	207	201	233	218	212	358	338			257.9	42
	Phenkapton	2275-14-1			Phenkapton	2275-14-1	147	207	201	233	218	212	205	138			195.1	160
2,2'-	Dimethyl-4,4'methylenebis(cyc**	6864-37-5		2,2'-	Dimethyl-4,4'methylenebis(cyc**	6864-37-5	224	207	201	233	218	212	283	268			230.8	89
(2-(1,3-	Dioxolan-2-yl)ethyl)triphenyl….**	86608-70-0		(2-(1,3-	Dioxolan-2-yl)ethyl)triphenyl….**	86608-70-0	334	207	201	233	218	212	361	338			263.0	25
m-	Mentha-1,3(8)-diene	17092-80-7	*	m-	Mentha-1,3(8)-diene	17092-80-7	296	207	201	331	218	212	334	268			258.4	27
4-	Methyl-m-phenylenediamine	95-70-8		4-	Methyl-m-phenylenediamine	95-70-8	224	207	201	331	218	212	260	138			223.9	105
1-	Butyl-2-methylpiridinium bromide	26576-84-1		1-	Butyl-2-methylpiridinium bromide	26576-84-1	348	207	201	331	218	212	368	338			277.9	7
	Methyl 3-(3-tert-butyl-4-hydrox**	6386-39-6			Methyl 3-(3-tert-butyl-4-hydrox**	6386-39-6	296	207	201	331	218	212	334	268			258.4	27
3-	Chloro-5-trifluoromethyl-2-pyri**	79456-26-1		3-	Chloro-5-trifluoromethyl-2-pyri**	79456-26-1	348	207	201	331	218	212	368	338			277.9	7
	Haloxifop-(2-ethoxyethyl)	87237-48-7			Haloxifop-(2-ethoxyethyl)	87237-48-7	224	207	201	331	218	212	260	138			223.9	105
amino-3((5-	Carboxymethyl-4-methyl-1,3-th**	111298-82-9		7-amino-3((5-	Carboxymethyl-4-methyl-1,3-th**	111298-82-9	374	207	201	233	218	212	380	338			270.4	21
6-(2,3-	Dimethylmaleimido)hexyl metha**	63740-41-0		6-(2,3-	Dimethylmaleimido)hexyl metha**	63740-41-0	329	207	201	233	218	212	353	268			252.6	46
	Trisodium bis (2-(5-chloro-4-ni**	93952-24-0	*		Trisodium bis (2-(5-chloro-4-ni**	93952-24-0	382	207	201	390	218	212	386	338			291.8	2
1,1,2,2-	Tetrabromoethane	79-27-6		1,1,2,2-	Tetrabromoethane	79-27-6	224	207	201	132	218	212	312	138			205.5	141
	Trichloronate	327-98-0			Trichloronate	327-98-0	73	207	201	132	218	212	145	138			165.8	208
1,3,5-	TGIC - Tris(oxiranylmethyl)-1,3,5-t	2451-62-9		1,3,5-	TGIC - Tris(oxiranylmethyl)-1,3,5-	2451-62-9	172	207	201	132	218	212	279	338			219.9	128
	Toluene-2,4-diammonium sulphat	65321-67-7	*		Toluene-2,4-diammonium sulphat	65321-67-7	67	207	201	233	218	212	128	138			175.5	198
	Carbon tetrachloride ^	56-23-5	Methane, tetrachloro-		Carbon tetrachloride ^	56-23-5	203	207	201	132	218	212	298	338			226.1	104
	Tricresyl phosphate (mixed isome	78-30-8	Phosphoric acid		Tricresyl phosphate (mixed isome	78-30-8	147	207	201	132	218	212	232	268			202.1	148
p-	Toluidine	106-49-0	*	p-	Toluidine	106-49-0	334	207	201	233	218	212	245	138			223.5	119
m-	Toluidine	108-44-1	*	m-	Toluidine	108-44-1	334	207	201	233	218	212	245	138			223.5	119
Tetrakis(	Tetramethylammonium) 6-amino**	116340-05-7	*	Tetrakis(	Tetramethylammonium) 6-amino**	116340-05-7	265	207	201	233	218	212	323	338			249.6	52
	Sodium-5-n-butylbenzotriazole	118685-34-0			Sodium-5-n-butylbenzotriazole	118685-34-0	176	207	201	233	218	212	245	268			220.0	121
hexakis(	Tetramethylammonium) 4,4'-vin**	124537-30-0		hexakis(	Tetramethylammonium) 4,4'-vin**	124537-30-0	265	207	201	233	218	212	323	338			249.6	52
C8-18	Alkylbis(2-hydroxyethyl)ammo**	68132-19-4		C8-18	Alkylbis(2-hydroxyethyl)ammo**	68132-19-4	99	207	201	233	218	212	165	138			184.1	179
1-	Amino-2-nitrobenzene	88-74-4		1-	Amino-2-nitrobenzene	88-74-4	265	207	201	233	218	212	323	338			249.6	52
2,3,4-	Trichlorobut-1-ene	2431-50-7		2,3,4-	Trichlorobut-1-ene	2431-50-7	126	207	201	233	218	212	186	138			190.1	171
	Allylamine	107-11-9	*		Allylamine	107-11-9	224	207	201	233	218	212	283	268			230.8	89
	Vamidothion	2275-23-2	*		Vamidothion	2275-23-2	348	207	201	233	218	212	283	138			230.0	95
	Tricresyl phosphate (mixed isome	78-32-0	Phosphoric acid		Tricresyl phosphate (mixed isome	78-32-0	224	207	201	233	218	212	283	268			230.8	89
4-	Amino-3-fluorophenol	399-95-1		4-	Amino-3-fluorophenol	399-95-1	203	207	201	233	218	212	276	268			227.3	103
	Tetradecylammoniumbis(1-(5-**	88377-66-6	*		Tetradecylammoniumbis(1-(5-**	88377-66-6	348	207	201	132	218	212	383	386			260.9	26
	Benzidine, salts of	531-85-1			Benzidine, salts of	531-85-1	176	207	201	233	218	212	221	138			200.8	151
	Nitrosodipropylamine	621-64-7			Nitrosodipropylamine	621-64-7	265	207	201	233	218	212	302	268			238.3	76
2-	Methyl-m-phenylenediamine	823-40-5	*	2-	Methyl-m-phenylenediamine	823-40-5	147	207	201	233	218	212	205	138			195.1	160
	Toxaphene ##	8001-35-2			Toxaphene ##	8001-35-2	203	207	201	331	218	212	239	138			218.6	129
mono-	Bromobenzene	108-86-1		mono-	Bromobenzene	108-86-1	296	207	201	331	218	212	334	268			258.4	27
	Tetrachloro-p-benzoquinone	118-75-2			Tetrachloro-p-benzoquinone	118-75-2	224	207	201	331	218	212	260	138			223.9	105
2,3,5,6-	Tetrafluorobenzyl trans-2-(2,2-**	118712-89-3		2,3,5,6-	Tetrafluorobenzyl trans-2-(2,2-**	118712-89-3	224	207	201	331	218	212	260	138			223.9	105
2-(4-(3-(4-	Chorophenyl)-4,5-dihydropyra**	106359-93-7		2-(4-(3-(4-	Chorophenyl)-4,5-dihydropyra**	106359-93-7	224	207	201	331	218	212	260	138			223.9	105
Bis(2,2,6,6-	Tetramethyl-4-piperidyl) succin**	62782-03-0	*	Bis(2,2,6,6-	Tetramethyl-4-piperidyl) succin**	62782-03-0	348	207	201	331	218	212	368	338			277.9	7
),O,O',O',-	Tetrapropyl dithiopyrophosphate	3244-90-4		O,O,O',O',-	Tetrapropyl dithiopyrophosphate	3244-90-4	224	207	201	331	218	212	260	138			223.9	105
	Clopyralid	1702-17-6	*		Clopyralid	1702-17-6	296	207	201	380	218	212	312	138			245.5	66
, N, N', N'-	Tetramethyldithiobis (ethylene)**	17339-60-5	*	N, N, N', N'-	Tetramethyldithiobis (ethylene)**	17339-60-5	348	207	201	380	218	212	362	268			274.5	17
4,4'-	Thiodi-o-cresol	24197-34-0	*	4,4'-	Thiodi-o-cresol	24197-34-0	296	207	201	380	218	212	312	138			245.5	66
2,4,5-	Trichloroaniline	636-30-6		2,4,5-	Trichloroaniline	636-30-6	296	207	201	380	218	212	312	138			245.5	66
	Dimethyldioctadecylammonium **	123312-54-9			Dimethyldioctadecylammonium **	123312-54-9	382	207	201	331	218	212	388	386			290.6	3
	Tetrachloroterephthalonitrite	1897-41-2			Tetrachloroterephthalonitrite	1897-41-2	386	207	201	233	218	212	389	386			279.0	5
o-	Nitrotoluene	88-72-2	Bezene ,1-methyl-2-nitro-	o-	Nitrotoluene	88-72-2	176	207	201	233	218	212	245	268			220.0	121
4,8,12-	Trimethyltrideca-3,7,11-trienoic**	91853-67-7		4,8,12-	Trimethyltrideca-3,7,11-trienoic**	91853-67-7	224	207	201	331	218	212	260	138			223.9	105
2,4,6-	Trimethylbenzophenone	954-16-5		2,4,6-	Trimethylbenzophenone	954-16-5	224	207	201	331	218	212	260	138			223.9	105

Acronyms and Abbreviations and Glossary of Terms

Acronyms and Abbreviations

ADI	Acceptable Daily Intake.
ANZSIC	Australian and New Zealand Standard Industrial Classification
BAF	Bioaccumulation Factor. Ratio of the concentration of a chemical in an aquatic or terrestrial organism to the concentration of the chemical in a specified medium - usually water or soil - over a specified time interval; assumes net uptake of the chemical through ingestion of food as well as through direct contact.
BCF	Bioconcentration Factor. Ratio of the concentration of a chemical in an aquatic organism to the concentration of the chemical in surface water over a specified time interval; assumes no uptake of the chemical from food.
C/R	Continuous or Repeated; in reference to releases of pollutants.
CCINFO	Chemical information database produced by the Canadian Centre for Occupational Health and Safety.
CESARS	Chemical Evaluation, Search, and Retrieval System.
EC	European Commission.
EC50	Concentration of a chemical that produces a sub-lethal response in 50 percent of observed organisms.
IARC	International Agency for Research on Cancer.
LC50	Concentration of a chemical that is lethal to 50 percent of observed organisms.
LD50	Dose of a chemical that is lethal to 50 percent of observed organisms.
LOAEL	Lowest Observed Adverse Effect Level.
logP	Octanol-water partition coefficient. Log of the ratio of the concentration of a chemical in octanol to the concentration of the chemical in water at equilibrium under standard test conditions.
MATC	Maximum acceptable toxicant concentration. Concentration of a chemical that may be present in surface water without producing significant harm to the aquatic organisms present.
MED	Minimum effective dose (mg/kg/day).
NEPC	National Environment Protection Council.
NEPM	National Environment Protection Measure.
NOAEL	No Observed Adverse Effect Level.
NOEC	No Observed Effect Concentration.

NPI	National Pollutant Inventory.
NRA	National Registration Authority.
PACIA	Plastic and Chemical Industry Association.
PAH	Polycyclic aromatic hydrocarbon.
PAAN	Pacific Air and Noise.
ppb	Parts per billion.
ppm	Parts per million.
TAP	Technical Advisory Panel.
USTRI	United States Toxic Release Inventory.
USEPA	United Sates Environment Protection Agency.

Glossary of Terms

Absorption	The transfer of a substance across a biological barrier into the bloodstream.
Acute	Referring to a short duration exposure.
Aqueous	Relating to water or water bodies.
Bias	A systematic error in an epidemiological or other type of study which tends to overestimate, or underestimate, the hazard.
Bioassay	A study that uses animals to measure the effect, such as carcinogenicity, of an agent.
Bioavailability	The potential for a substance in the environment to be incorporated by living organisms.
Carcinogenic	Capable of causing cancer.
Chronic	Having a persistent, recurring, or long-term nature.
Dose	The quantity of an agent delivered to an organism.
Dose-Response	A quantitative relationship between the dose of an agent and an effect caused by the agent.
Ecosystem	A biological community and its non-living environment.
Ecotoxicity	The study of the adverse effects of agents on ecological systems, including aquatic and terrestrial animals, plants, and micro-organisms.
Emissions	Pollutants discharged into air, water, or land in liquid, gaseous, or solid form.
Epidemiology	The study of the distribution and determinants of diseases and injuries in human populations.
Exposure Assessment	The description of the parameters and extent of exposures to humans and other organisms to substances released from a specified source.
Extrapolation	The process of estimating unknown values outside the range of observation from observed values.
Genotoxicity	The property of a substance to interact with and alter the genetic material of a cell.
Hazard	A potential source of risk that does not necessarily produce risk.
Hazard Identification	The first step in risk assessment that evaluates the potential adverse health or environmental effects that a substance or activity has the potential to cause.
Neurotoxicity	The production of adverse effects on the nervous system.

Precautionary Measure	An approach for evaluating toxicity data that considers all relevant information on whether a particular chemical is likely to be a human or environmental hazard and the magnitude of any such hazard, and attempts to reach an overall conclusion based on the quality, strength, and relevance of the data. In some cases a judgement may have to be made in the absence of relevant data.
Reference Dose	An estimate - spanning perhaps an order of magnitude - of a daily exposure to the human population that is likely to be without an appreciable risk of deleterious effects during a lifetime.
Reproductive Toxicity	The production of adverse effects on the reproductive system.
Risk	The potential for a chemical or physical agent to cause adverse effects on the environment or human health.
Risk Assessment	A systematic qualitative or quantitative evaluation of the health and environmental risk resulting from exposure to a chemical or physical agent. A four stage process is normally followed: hazard identification; dose response assessment; exposure assessment; and risk characterisation.
Risk Characterisation	The final step of risk assessment which summarises the information from hazard identification, dose-response evaluation, and exposure assessment into an overall conclusion on risk.
Speciation	The tendency of a substance to exist in different forms or species as a result of spontaneous chemical reactions with other elements.
Systemic	Referring to the whole body. A systemic effect is a health effect that occurs in the body distant from the point of contact with the toxicant.
Teratogenic	The capability to produce birth defects.
Threshold	a. The volume of substance used or handled or rate of emission of a substance that triggers reporting obligations by facilities. b. The dose of a toxicant below which there is no adverse effect.
Toxicology	The science of identifying potential hazards using controlled studies in animals, isolated tissues, cells, or cellular components.

Use of EC Criteria for Determining Health and Environmental Hazards for Classification of Chemicals and Application Default Criteria for the National Pollutant Inventory

The Panel has applied European Commission Risk Phrases (see Appendix V) to arrive at a score for the range of criteria identified in Chapter One. These risk phrases and their corresponding scores are fully discussed in; Chapter One, the explanatory notes to Appendix III and in Appendix V. However, where EC Risk Phrases were not applicable the Panel retained the scores originally generated in the earlier NPI list of 150 substances.

There are no EC risk phases current for the following substances and groups of substances on the reporting list and the Panel ranked these substances by applying the default PAAN scores. In using the default scores, the Panel was aware that greater transparency in the creation of the default scores was needed. The following information on those substances where the default scores were applied shows the hazard criteria by which these substances were scored.

The Panel notes that in the ranking of other substances, where EC risk phrases do occur, the Panel's score, in a majority of cases, identically or closely matched the PAAN scores. For this reason, the Panel has confidence in the approach adopted by PAAN and the use of default scores where EC risk phrases are not evident.

Chromium (VI) Compounds

Sufficient evidence in humans for carcinogenicity of Cr (VI) compounds as encountered in chromate production, pigment production, and chromium plating. IARC classification group 1.

LC_{50} (96 hour) striped catfish 200 mg 1^{-1}
LC_{50} (96 hour) flathead minnow 36.2 mg 1^{-1}
LC_{50} (96 hour) giant gourami 45.2 mg 1^{-1}
LC_{50} (28 day) rainbow trout 0.19 mg 1^{-1}

Dichloromethane

Inadequate evidence for carcinogenicity to humans, sufficient evidence for carcinogenicity to animals. IARC classification group 2B.

LC_{50} (96 hour) flathead minnow static bioassay 310 mg 1^{-1}
LD_{50} oral rat 1.6 ml kg^{-1}
LC_{50} (15 minutes) inhalation rat 200 gm^{-3}
LD_{50} subcutaneous mouse 64 g kg^{-1}
LD_{50} intraperitoneal mouse, dog 1300-2000 mg kg^{-1}

Lead and Compounds

LC_{50} (28 day)rainbow trout 0.22 mg kg^{-1}
EC_{50} (96 hour) giant gourami kg^{-1}
LOEC chronic survival rainbow trout 0.0007 mg kg^{-1}
EC_{50} (96 hour) reproduction *Navicula incerta* 11 mg kg^{-1}
LC_{50} (48 hour) *Daphnia magna* 0.3 mg kg^{-1}
EC_{50} (48 hour) *Daphnia magna* 3.61ppm
TD_{LO} oral woman 450 mg kg^{-1}
TD_{LO} oral mouse 4800 mg kg^{-1}
LD_{LO} oral pigeon 160 mg kg^{-1}
LD_{LO} intraperitoneal rat 1000 mg kg^{-1}

Cadmium and Compounds

Limited evidence for carcinogenicity to humans, usfficient evidence for carcinogenicity to animals. IARC classification group 2A.

LC_{50} (96 hour) Japanese marine species; girella and goby 5.5-30.5 mg 1^{-1}
LC_{50} (96 hour) *Palamonetes vulgaris* 0.76 mg 1^{-1}
LC_{50} (96 hour) *Penaeus duorarum* 3.5 mg 1^{-1}
LD_{50} oral rat 225 mg kg^{-1}
LC_{50} oral rat, mouse 890 mg kg [1] Adverse effects included epithelial desquamation and necrosis of the gastric and intestinal mucosa with dystrophic changes of the liver, heart, and kidneys.
LC_{50} (30 minutes) inhalation rat 25 mg m^{-3}
LD_{50} intraperitoneal rat 4 mg kg^{-1}

1,3-Butadiene

Inadequate evidence for carcinogenicity to humans, limited evidence for carcinogenicity to animals. IARC classification group 2B.

LC_{50} (24 hour) pinperch 71.5 mg 1^{-1}
LD_{50} oral rat, mouse 3.2-5.5 g kg^{-1}
LC_{50} (23 minute) inhalation rabbit 250,000 ppm (in air).
LC_{50} (2 hour) inhalation mouse 270,000 mg m^{-3}
LC_{50} (4 hour) inhalation rat 250,000 mg m^{-3}

Cobalt and Compounds

Inadequate evidence for carcinogenicity to humans, sufficient evidence for carcinogenicity to animals. IARC classification group 2B.

LC_{50} (96 hour) flathead minnow 92 mg 1^{-1}
EC_{50} (48 hour) *Daphnia magna* 1.49 mg 1^{-1}
LD_{50} oral rat 6170 mg kg^{-1}
LD_{LO} intratracheal rat 25 mg kg^{-1}

Tetrachloroethylene

Inadequate evidence for carcinogenicity to humans, sufficient evidence for carcinogenicity to animals. IARC classification group 2B.

LC_{50} (17 day) guppy 18 mg 1^{-1}
EC_{50} (30 minute) *Photobacterium phosphoreum* 120pm Microtox test
EC_{50} (24 hour) *Daphnia magna* 0.5 mg 1^{-1}
LD_{50} oral rat, mouse 2600, 8100 mg kg^{-1} respectively
LC_{50} (8 hour) inhalation rat 34,000 mg m^{-3}
LD_{50} intravenous dog 85 mg kg^{-1}

Nickel Carbonyl

Nickel and nickel compounds, sufficient evidence for carcinogenicity to humans and animals. IARC classification group 1.

LC_{50} (20-30 minute) inhalation mouse, cat, rat 0.067-0.24 mg 1^{-1}
LD_{90} (30 minute) inhalation dog 2.5 mg 1^{-1}
LD_{50} subcutaneous rat 21 mg kg^{-1}
LD_{50} intraperitoneal rat 13 mg kg^{-1}
LD_{50} intravenous rat 22 mg kg^{-1}

Nickel Subsulphide

Nickel and nickel compounds, sufficient evidence for carcinogenicity to humans and animals. IARC classification group 1.

LD_{50} intraperitoneal guinea pig 102 ug kg^{-1}
Inhalation rat, mice 0.6-10.0 mg m^{-3} lesions observed in the respiratory tract with extensive lesions in the lungs, including necrotising pheumonia. 5-10 mg m^{-3} rat dose groups developed emphysema and 5 mg m^{-3} mice developed fibrosis. All dose groups except 0.6 mg m^{-3} mice showed degereration of the respiratory ephithelium and atrophy of the olfactory epithelium. Clinical symptoms included reduced body weight gain, dehydration, emaciation, and laboured respiration.

Chromium (III) Compounds

In adequate evidence for carcinogenicity of trivalent chromium compounds to humans and animals. IARC classification group 3.

LC_{50} (96 hr) rainbow trout 4.4mg $1-^{1}$
LC_{50} (96 hr) zebra fish 58.5 mg $1-^{1}$
LC_{50} (48 hr) *Daphnia magna* 2 mg $1-^{1}$
LC_{50} (48, 96 hr) *Asellua aquaticus* 937,442 mg $1-^{1}$

Acetone

Screen-printing workers exposed to acetone reported significantly greater frequencies of neurasthenic symptoms and other symptoms of peripheral neuropathy and autonomic dysfunction than a control group. Women occupationally exposed to solvents including acetone in chemical plants showed deviations in haemoglobin and haematocrit values, erythocyte, leukocyte, lymphocyte, monocyte, and granuloctye counts, coagulation and bleeding times, and in methanol absorption.

LC_{50} (96 hour) rainbow trout 5540 mg 1^{-1}
LC_{50} (24, 96 hour) goldfish, bluegill sunfish, mosquito fish 5000-13000 mg 1^{-1}
LC_{50} (24 hour) harlequin fish 5700 ppm
LC_{50} (96 hour) *Penaeus duorarum* 3.5 mg 1^{-1}
ED_{50} (24, 48 hour) *Daphnia magna* 10mg 1^{-1}
LD_{50} (24, 48 hour) brine shrimp 2100mg 1^{-1} 24 °C
LC_{50} oral rat, mouse rabbit, dog 4-11 g kg^{-1}
LC_{50} (5 day diet) oral Japanese quail >40,000 ppm

Boron and Compounds

Destructive to tissues of the mucous membranes and upper respiratory tract, eyes, and skin. In humans, inhalation of BCl_3 can be fatal as a result of spasm, infalmmation, andoedema of larynx and bronchi, chemical pneumonitis, and pulmonary oedema. Symptoms of exposure may include burning sensation, coughing, laryngitis, shortness of breath, wheezing, headache, nausea, and vomiting. Can cause nervous system disturbance.

A study of 78 workers exposed for 10-15 years to BF_3 in the former Soviet Union showed workers suffered from dryness and bleeding of nasal mucosa, bleeding gums, dry and scaly skin, and pain in the joints. In the USA 13 workers exposed to BF_3 concentration range 0.1-1.8 ppm showed reduced pulmonary function.

LD_{50} oral mouse 3136 mg kg^{-1} (boron oxide)
LD_{50} intraperitoneal 1868 mg kg^{-1} (boron oxide)
LC_{LO} (7 hour) inhalation mouse, rat 20ppm (boron trichloride)
LC_{50} (1 hour) inhalation male rat 2541ppm (boron trichloride)
LC_{50} (4 hour) inhalation rat 1180 mg m^{-3} (boron trifluoride)
LC_{50} (2 hour) inhalation mouse 3460 mg m^{-3} (boron trifluoride)
LC_{50} (4 hour) inhalation guinea pig 109 mg m^{-3} (boron trifluoride)

Distillates (coal tar)

Sufficient evidence for carcinogenicity to humans and animals. IARC classification group 1.

TD_{LO} oral mouse 12 g kg^{-1}
TD_{LO} dermal mouse 36 g kg^{-1}

Naphtha Solvent

LC_{50} (96 hour) fathead minnow, bluegill sunfish 2,21 mg 1^{-1}, respectively
LC_{50} (24 hour) *Daphnia magna* 0.4-2 mg 1^{-1}
LC_{Lo} (5 min) inhalation human 3 pph
LC_{Lo} (6 hour) inhalation rat 1600 ppm
LD_{Lo} intravenous man 27 mg kg^{-1}
LD_{Lo} intraperitoneal man 2500 mg kg^{-1}

Copper and Compounds

Intratracheal instillation 20 mg (single dose) to male rats of primary copper sland and secondary copper slag. Minimal to slight alveolar wall fibrosis was seen in the 2 copper slag groups. Significant numbers of primary lung tumors principally adenocarcinomas and adenomas were observed. Among male Japanese copper smelter workers, squamous cell carcinoma have been found to be very frequent.

LC_{50} (48 hour) larvae of flat fish *Paralichthys olivaceus* 0.36 mg 1^{-1} (Cu^{2+})
LC_{50} (96 hour) *Oreochromis niloticus* 1.06 mg 1^{-1}
LC_{50} (96 hour) rainbow trout 0.253 mg 1^{-1}
EC_{50} (48 hour) *Daphnia magna* 0.093 mg 1^{-1}
LC_{50} (24 hour) *Daphnia magna* 0.4-2 mg 1^{-1}
IC_{50} cell division *Chlorella pyrenoidosa* 16 µg 1^{-1} in synthetic salt water
LC_{50} (96 hour) *Perna viridis* 620 µg 1^{-1}
Asellus aquaticus chronic exposure to 5 µg 1^{-1} juvenile development most sensitive response
LD_{50} chick embryo 58 µg 1^{-1}
TD_{LO} oral human 0.120 mg kg^{-1} (gastrointestinal effects)
LD_{50} intraperitoneal mouse 3.5 mg kg^{-1}

Methyl Isobutyl Ketone

May depress the central nervous system at high concentrations, vapour may be irritating to mucous membranes. Workers exposed to 2050 mg m^{-3} for 20-30 minutes per day^{-1} and 328 mg m^{-3} for the remainder of the day complained of weakness, loss of appetite, headache, eye irritation, stomach ache, nausea, vomiting, and sore throat. After improvement in working conditions reduced levels to a maximum of 410-430 mg m^{-3} most symptoms disappeared.

LC_{50} (96 hour) fathead minnow 505-537 mg 1^{-1}
LC_{50} (24 hour) goldfish 460 mg 1^{-1}
EC_{50} (5 minute) *Photobacterium phosphoreum* 79.6 ppm Microtox test
LD_{50} oral guinea pig, rat 1.6-2.8 g kg 1^{-1}
LD_{50} oral redwing blackbird >100 mg kg^{-1}
LD_{50} inhalation mouse 23.3 g m^{-3}
LD_{50} intraperitoneal mouse, rat 260-400 mg kg^{-1}

Fluoride Compounds

Allergic dermatoses were observed in workers occupationally exposed to HF Rabbits and guinea pigs exposed to various concentrations of HF exhibited respiratory irritation, slowed respiratory rate, damage to the conjunctiva, cornea and nasal mucous membrane; cardiac dilation, congestion and myocardial injury; pulmonary haemorrhage, congestion, emphysema and oedema, with broncho-pneumonia in some cases; hepatic congestion; splenic congestion and oedema; renal congestion and oedema of other organs.

LC_{50} (1 hour) inhalation mouse, rat, monkey 342, 1744, 966 ppm respectively (HF)
LC_{LO} (30 minute) inhalation human 50 ppm (HF)
LC_{LO} dermal mouse 50 mg kg^{-1} (HF)
LD_{LO} subcutaneous from 112 mg kg^{-1} (HF)

Aluminium (fume and dust compounds)

Workers exposed to aluminium for a long period revealed neuropsychiatric symptoms. Aluminium affects the central nervous system.

LC_{50} (4 week) rainbow trout 0.56 mg 1^{-1}
lowest observed effective concentration (3 week) long nose sucker, brook trout 0.1 and 0.2 mg 1^{-1}, respectively
Yolk fry of Atlantic salmon exposed to 135 μg 1^{-1} at pH 5 and 1°C for ≈30 day caused ≈6% mortality. Acidification increased aluminium accumulation but ≈60% of aluminium was absorbed by the fish body surface and was lost early during depuration.
LC_{50} (48-96 hour) *Asellus aquaticus* 6.57-4.37 mg 1^{-1} specific toxicological reaction to mobility.
EC_{50} (48 hour) *Daphnia magna* 1.4 mg 1^{-1}
EC_{50} (3 week) *Daphnia magna* 0.68 mg 1^{-1} reproductive effects. Lowest observed effective concentration (3 week) *Daphnia magna* 0.32 mg 1^{-1} reproductive effects.

Chlorine Dioxide

Exposure of a worker to 19 ppm was fatal (duration of exposure not specified). Repeated acute exposure of workers to undetermined concentrations caused eye and throat irritations, nasal discharge, cough, sneezing, bronchitis, and delayed onset of pulmonary oedema.

LD_{50} oral rat 292 mg kg^{-1}
LC_{Lo} (15 minute) inhalation rat 500 ppm

Ethylene Oxide

Limited evidence for carcinogenicity to humans, sufficient evidence of carcinogenicity to animals, IARC classification group 2A.

LC_{50} (24 hour) goldfish 90 mg 1^{-1}
LD_{50} (24 hour) oral rat, guinea pig 270-330 mg kg^{-1}
LD_{50} subcutaneous rat 187 mg kg^{-1}
Inhalation rat 0,500, or 1500 ppm (duration unspecified). The high dose reduced the levels of reduced glutathione and glutathione reductase in the cytosol of the liver by 10 and 60%, respectively. Levels in the liver mitochondria were only slightly affected.

Organo-tin Compounds

In experiemental animals tributyltin compounds cause damage to the liver, haematological and endocrine systems and are irritating to the skin and eyes. Inhalation of aerosols leads to respiratory irritation. Adverse effects to the immune system in rats have been reported. The no-observed effect level for tributyltin compounds using the *Trichinella spinalis* host resistance model in rats was 0.5-5.0 mg kg^{-1}

LC_{50} (48 hour) red killifish 62 µg 1^{-1}

Toxicity threshold (62 minute) *Bacillus subtilis* ≈30 µg 1^{-1}

EC_{50} (growth inhibition) *Skeletonema costatum* 0.36-0.39 µg 1^{-1}
LD_{LO} oral mouse, rabbit 50, 320 mg kg^{-1} respectively

Zinc and Compounds

Intratracheal instillation (2 yr) single dose of 25 or 50 mg (or repeated doses of 2 or 5 mg) induced sarcomas in the lungs and testicular tumours in 15% of treated animals (species unspecified).

LC_{50} (96 hour) brown trout <0.14 mg 1^{-1} in soft water at pH 8, 3.20 mg 1^{-1} in hard water at pH 5.
LC_{50} (48 hour) *Daphnia magna, Moina macrecopa, Paratya compressa improvisa* 0.12-1.6 mg 1^{-1}

Primary production of cell multiplication were inhibited at 30 µm 1^{-1} in 2 green and 1 diatom freshwater algal species from Lake Ontario.

Magnesium Oxide Fume

In a cohort study of 3,391 male workers producing magnesium metal (work exeperience >1 year) 152 cases of cancer were recorded (20 more than expected); cancers incllluded cancer of lip, stomach, and lung.
TC_{Lo} (duration unspecified) inhalation human 400 mg m^{-3}.

Dibutyl Phthalate

LC_{50} (24 hour) grass shrimp 10-50 ppm
EC_{50} (30 minute) Photobacteruim phosphoreum 11-23 ppm Microtox test.
LD_{50} oral rat >8 g kg^{-1}
LC_{50} (2 hour) inhalation mouse 25 g m^{-3}
LD_{Lo} dermal rat 6 g m^{-3}
LD_{50} intraperitoneal rat 3050 mg kg^{-1}
LD_{50} intravenous mouse 720 mg kg^{-1}

Nickel and Compounds

Nickel and nickel compounds, sufficient evidence for carcinogenicity to humans and animals, IARC classification group 1.

LC_{50} (96 hour) banded killfish, striped bass, pumpkin seed, white perch, American eel, carp 6.2-46.2 mg 1^{-1} (salt unspecified)
Rainbow trout exposed to nickel (slat unspecified) had a reduction in glucidic stores groups of cells of the pancreas.
Life cycle study fathead minnow (pH 7.8, 18°C, 210mg $CaCO_3$ hardness) $\subseteq$0.38 mg 1^{-1} (salt unspecified) did not adversly effect reproduction, survival or growth, 0.78 mg 1^{-1} (salt unspecified) significantly effected the number and hatchibility of eggs, growth survival of hte 1st generation was not effected.
LC_{50} (74 hour) carp eggs, larvae 6.1, 8.4 mg 1^{-1} (salt unspecified), respectively. 3 mg 1^{-1} caused increased numbers of abnormal larvae and embryos which failed to hatch.
LC_{50} (from fertilisation to 4 day after hatching) channel catfish, goldfish 0.71, 2.78 mg 1^{-1} (salt unspecified), respectively.
LD_{Lo} oral rat 5 mg kg^{-1} guinea pig 5 mg kg^{-1} (form unspecified), respectively.
LD_{Lo} oral rabbit, rat 7.5, 12.5 mg kg^{-1} (form unspecified) respectively.
Intraperitoneal male rat 3 or 6 mg kg^{-1} (form unspecified) kidney effects included decrease in Bowmann's space, dilated tubules, loss of brush border, flattened epithelia and some regemerative activity.
LD_{Lo} intraperitoneal rabbit 7 mg kg^{-1} (form unspecified)
LD_{Lo} intravenous dog, mouse 10, 50 mg kg^{-1} (form unspecified) respectively
LD_{Lo} intratracheal rat 12 mg kg^{-1} (form unspecified)

Antimony and Compounds

Lung tissue samples (200) taken from women aged over 40 years with lung cancer and from urban areas were reported to have traces of antimony due to air pollution. Inhalation of antimony dust and fumes in humans causes nose and throat irritation, inflamation of the respiratory tract, pneumonitis, ulceration and perforation of the nasal septum. Chronic inhalation ($SbCl_3$) may lead to olfactory disorders.

LC_{50} (28 day) rainbow trout 0.66 mg 1^{-1}
EC_{50} (48 hour) *Daphnia magna* 423 mg 1^{-1} for trivalent antimony.

LD_{50} intraperitoneal rat, guinea pig 100-150 mg kg^{-1}
LD_{50} oral rat 1120 mg 1^{-1} 8 (antimony pentachloride)
LD_{50} oral guinea pig 900 mg 1^{-1} (antimony pentachloride)
LD_{50} inhalation mice 0.27 mg 1^{-1} (antimony pentafluoride)
LD_{50} oral guinea pig 570 mg kg^{-1} (antimony trichloride)
TC_{LO} inhalation human 73 mg m^{-3} pulmonary and gastrointestinal effects (antimony trichloride)
LD_{50} oral rat >34.6 μg kg^{-1} (antimony trioxide)
LD_{50} percutaneous rabbit >2 μg kg^{-1} (antimony trioxide)

Chloroethane (ethyl chloride)

No adequate data for evidence of carcinogenicity to humans, limited evidence for carcinogenicity to animals. IARC classification group 3.

LC_{50} (2 hour) inhalation rat 152 g m^{-3} signs of toxicity included anaesthesia, liver congestion haemorrhage, and lung oedema.
Inhalation rat, mouse (6 hour) 11-26 g m^{-3} resulted in decreased non-protein sulphydryl concentrations in the liver.
Inhalation rat 39,600 mg m^{-3} 6 hour day^{-1} for 102 weeks. Skin tumours occurred in 4/50 control male and 9/50 treated male rats. Brain glial-cell tumours occurred in 3/50 female rats compared to 0/50 controls.

Cyclohexane

Classed as having low chronic toxicity due to its efficient metabolism and excretion. It does not produce the toxic changes to nerve cells and peripheral neuropathy associated with exposure to *n*-hexane.

LC_{50} (7 day) guppy >84mg 1^{-1}
LC_{50} (24-96 hour) bluegill sunfish 43-34 mg 1^{-1}
EC_{50} (48 hour) *Daphnia magna* 400 mg 1^{-1}
Threshold concentration cell multiplication inhibition test *Uronema parduczi* >50mg 1^{-1}, *Mytilus edulis* 10-20 % increase in growth rate at 1-100ppm.
EC_{50} (48 hour) *Chlorella pyrenoidosa* 3.8 mg 1^{-1}
EC_{50} (5, 30 minute) *Photobacterium phosphoreum* 227 ppm Microtex test.
LD_{Lo} oral mouse 813 mg kg^{-1}
LD_{Lo} oral rabbit 5500 mg kg^{-1}
LD_{Lo} (2 hour) inhalation mouse 70 g m^{-3}
LD_{Lo} intravenous rabbit 77 mg kg^{-1}
LD_{Lo} oral rat 8.0-39 mg kg^{-1} depending on age, extrapolation to humans suggests a no-effect level of 0.016 ml kg^{-1}

Manganese and Compounds

Compounds found not to be carcinogenic. Inhalation of fine dust containing relatively low concentration of MnO_2 causes pneumonitis. Other chronic effects include peribronchial and perivascular sclerosis, inflammatory changes, appearance of collagenic threads, accentuation of blood vessels, and reduced resistance to infection.

LC_{50} (28 day) rainbow trout 2.91mg 1^{-1}
EC_{50} (24-96 hour) *Selenastrum capricornutum* 3.1 mg 1^{-1} (salt)
LC_{50} (48 hour) *Daphnia magna* 5.7 mg 1^{-1} (sulphide,salt)
LC_{50} (48-96 hour) *Asellus aquaticus* 333-771 mg 1^{-1}
LD_{50} injeciton chicken egg 765 µg egg $^{-1}$ (as chloride)
Intratracheal rat (1 month) 12.5 mg kg^{-1} daily of welding dust containing 7.5-11% manganese caused changes to the cardiac-respiratory system including effects to metabolism and macrophage morphology and atelectasis and emphysema. No fibrogenic activity was observed.

Creosote

Sufficient evidence for carcinogenicity to humans, sufficient evidence for carcinogenecity to animals, IARC classification group 1. Human skin cancer positive (hands, forearm, scrotum, penis, face, neck)

LC_{50} (96 hour) *Homarus americanus* 1760 µg 1^{-1}
LC_{50} (96 hour) *Homarus americanus* larvae 20 µg 1^{-1} at 20°C
LC_{50} (96 hour) *Crangon sp.* 130-110 µg 1^{-1} at 10 and 20°C respectively.
LC_{Lo} oral pigeon ≅0.1 g kg^{-1}
LD_{50} oral mouse, rabbit, rat 435-725 mg kg^{-1}
LD_{Lo} (14-36 hour after ingestion) oral man ≅7g (adult), 1-2g (child)

Polychlorinated dioxins and furans (Benzo(a)pyrene)

No adequate evidence for carcinogenicity to humans, sufficient evidence for carcinogenicity to animals, IARC classification group 2A. May cause cancer - May cause heritable genetic damage -May cause birth defects (R45, R46, R47)

LD_{50} (96 hour) *Neanthes arenaceodentata in seawater* at 22 °C<1 ppm(in static bioassay)
EC_{50} (96 hour) *Daphnia pulex* 0 .05 mg 1^{-1}
LD_{Lo} intraperitoneal mouse 500 mg kg^{-1}
LD_{50} subcutaneous rat 50 mg kg^{-1}

1,1,1,2-Tetrachloroethane

No adequate evidence for carcinogenicity to humans or animals, IARC classification group 3.

LD_{50} (96 hour) bluegill sunfish 20 mg 1^{-1}
IC_{50} (25 day) *Nitrosomonas* sp. 8.7 mg 1^{-1}
IC_{50} (50 day) methanogenic bacterial culture 1.7 mg 1^{-1}
LD_{50} oral rat, mouse 670, 1500 mg kg^{-1} respectively.
LC_{50} (4 hour) inhalation rat, rabbit 2100, 2800 ppm respectively.
LD_{50} dermal rabbit 20,000 mg kg^{-1}

Ethanol

Sufficient evidence for carcinogenicity of alcoholic beverages in humans, inadequate evidence for carcinogenicity of ethanol of alcoholic beverages in animals, IARC classification for alcoholic beverages group 1. Highly flammable (R11).

LC_{50} (24 hour) fingerling trout 11.2 g 1^{-1}
LC_{50} (1, 24, 48, 72, 96 hour) fathead minnow >18-13.4 g 1^{-1}
LC_{50} (24 hour) creek chub >7 g 1^{-1}
LC_{50} (7 day) guppy 11 g 1^{-1}
EC_{50} (5, 30 minute) *Photobacterium phosphoreum* 34.9 g 1^{-1} Microtox test.
Cell manipulation inhibition test *Pseudomonas putida* 6500 mg 1^{-1}, *Microcystis aereginosa* 1450 mg 1^{-1}, *Scenedesmus quadrecauda* 5000 mg 1^{-1}, *Entosiphon sulcatum* 65 mg 1^{-1}
LD_{50} oral mouse, rat 3450-7060 mg kg^{-1}
LD_{50} (10 hour) inhalation 20,000 ppm
LD_{50} (4 hour) inhalation mouse 39,000 mg m^3
LD_{50} intravenous rat 1440 mg kg^{-1}
LD_{50} intravenous mouse 1973 mg kg^{-1}
LD_{50} intraperitoneal rat 3750 mg kg^{-1}
Oral women (12 week) 256 g kg^{1} caused central nervous system effects.