

Legislative
Assembly
of Ontario



Assemblée
législative
de l'Ontario

Ontario Legislative Library
Research and Information Services
Room 2520, Whitney Block
Queen's Park
Toronto, Ontario M7A 1A9
Telephone: (416) 325-3675
Facsimile: (416) 325-3696

Bibliothèque de l'Assemblée législative de l'Ontario
Services de recherches et d'information
Bureau 2520, Edifice Whitney
Queen's Park
Toronto (Ontario) M7A 1A9
Téléphone: (416) 325-3675
Télécopieur: (416) 325-3696

090075F1

**FINAL SUMMARY OF RECOMMENDATIONS:
BILL 167 – THE *TOXICS REDUCTION ACT, 2009****

Prepared for:

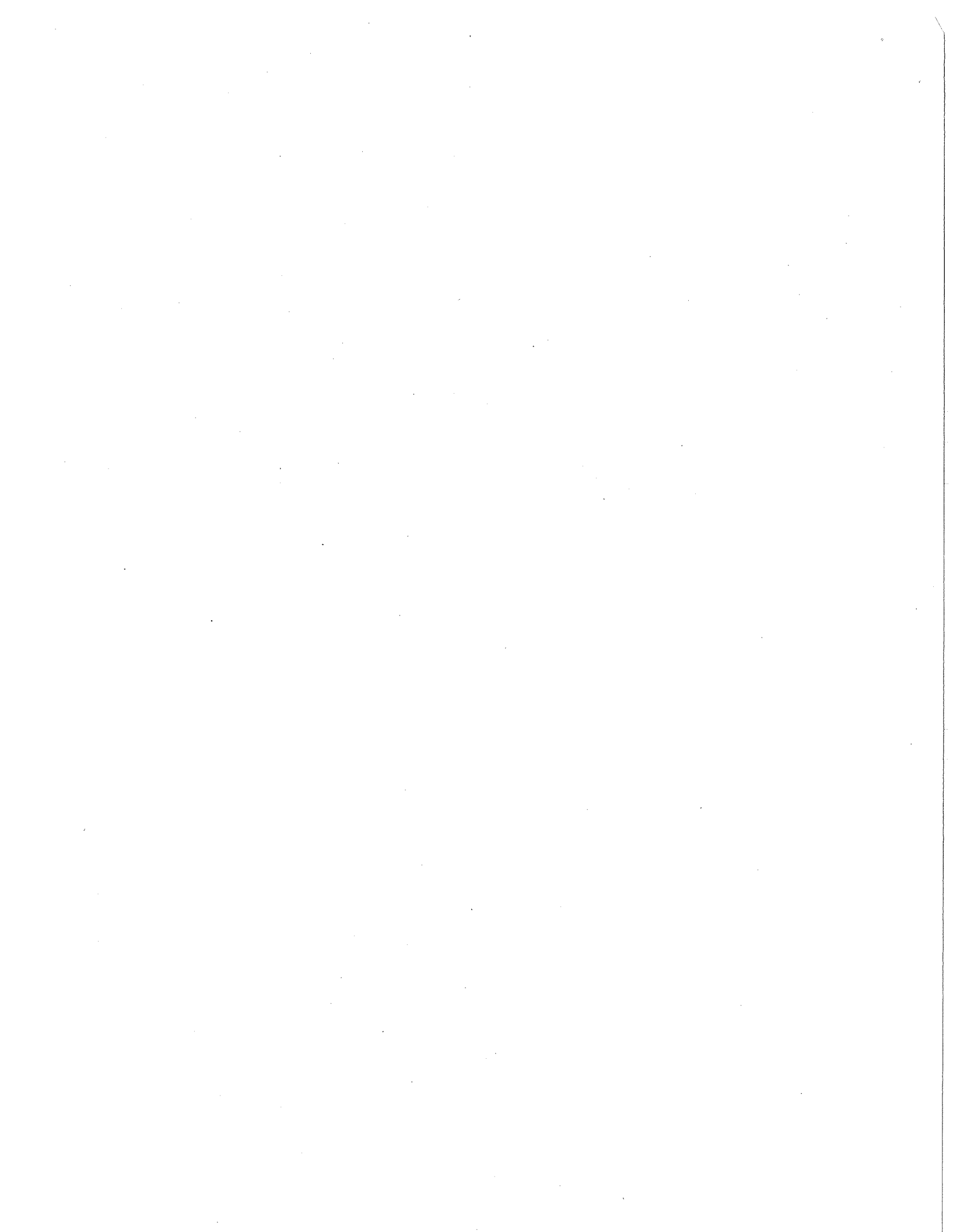
Standing Committee on
General Government

Prepared by:

James Charlton
Research Officer
Legislative Research Service

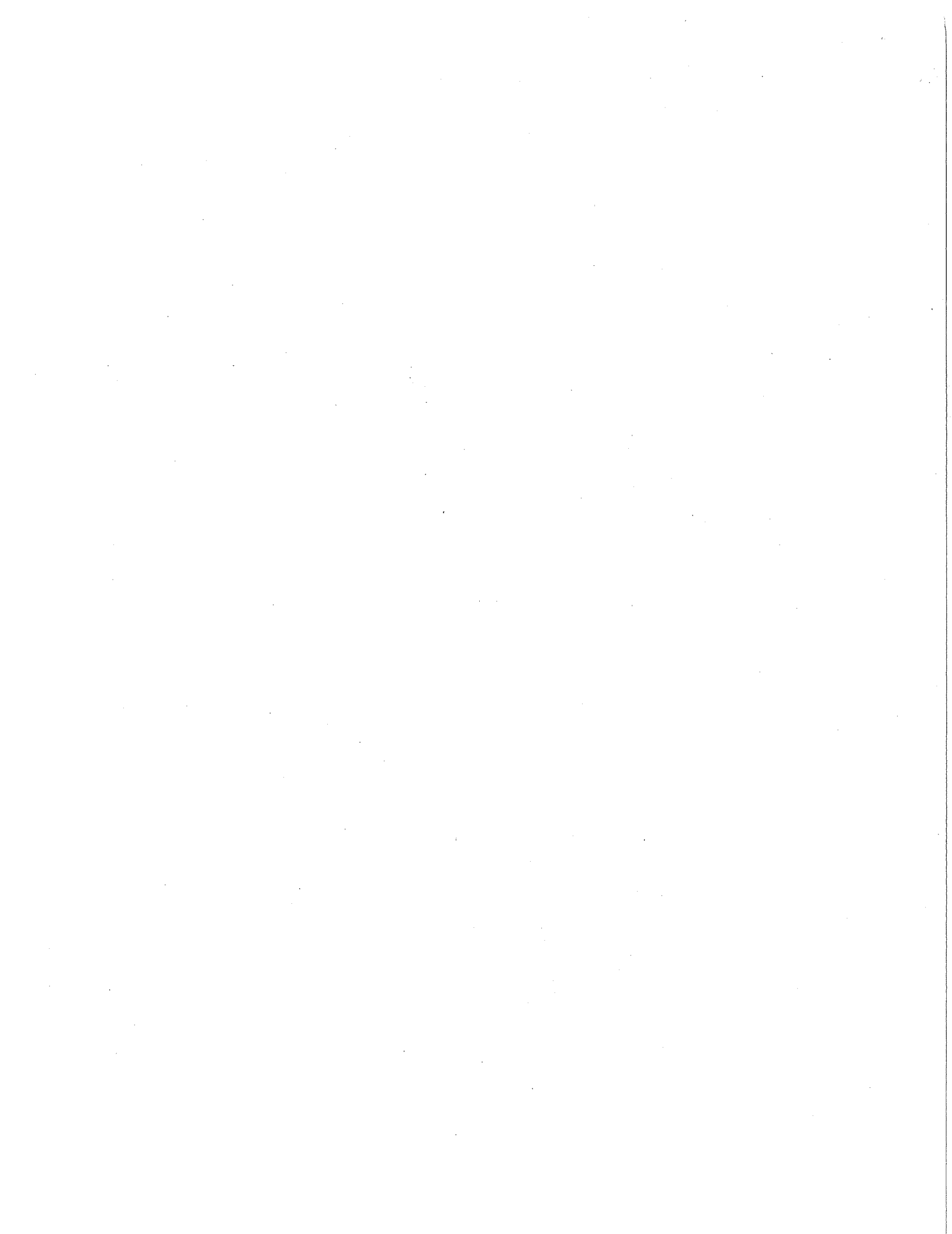
May 28, 2009

- * Projects prepared by the Legislative Research Service are designed in accordance with the requirements and instructions of the Committee making the request. The views expressed should not be regarded as those of the Legislative Research Service or of the individual preparing the project.



CONTENTS

INTRODUCTION	1
RECOMMENDATIONS RELATED TO SPECIFIC SECTIONS OF THE BILL	2
Global Change	2
Section 1 Purpose	2
Section 2 Definitions	2
Section 3 Requirement for toxic substance reduction plans	4
Section 4(1) Contents of plan	5
Section 8 Summary of Plan	9
Section 9 Toxic substance accounting	9
Section 10(3) Information available to public	11
Section 10(4) Information available to public	11
Section 22(1) Disposition of things seized	12
Section 29(6) Absolute liability	12
Section 31 Appeal of order	12
Section 44 Document prepared for another purpose	12
Section 49(1) Regulations	13
Sections 50 to 64	15
Section 64, amending s. 49(1) Regulations	15
OTHER RECOMMENDATIONS	17
Communication Along the Supply Chain	17
Confidential Information	17
Conflict with Other Laws	17
Duplication Concerns	17
European Union <i>REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals)</i> Regulation	18
Funding for a Toxics Reduction Strategy	18
Independent Legal Review of Bill 167	18
Monitoring Program	19
Pre-Impact Safety Valve	19
Proposed Amendment to <i>Occupational Health and Safety Act</i>	19
Proposed Preamble	19
Reduction Targets	19
Role of the Public	20
Sector-Specific Approach	20
Substitution of Safer Alternatives	21
Technical Assistance Programs	21
Toxic Use Reduction Institute	22
Toxic Use Reduction Planners	22
WITNESS LIST	23



INTRODUCTION

This Final Summary sets out recommendations and concerns presented to the Standing Committee on General Government during its public hearings on Bill 167, the *Toxics Reduction Act, 2009*, held in Toronto on May 13 and 25, 2009.

This Final Summary is intended to assist Members in their deliberations on Bill 167. It is not a complete record of all the evidence that the Committee heard, nor is it a comprehensive review of all arguments made by witnesses. Accordingly, comments have been abbreviated and recommendations summarized. For a full account of the evidence presented to the Committee, reference should be made to *Hansard*, and to the written submissions themselves.

Where possible, witnesses' comments have been assigned to the most appropriate provision of the Bill. Concerns or recommendations of witnesses on other matters have been added under appropriate topical headings at the end of the document.

An alphabetical list of the witnesses and the abbreviations used to identify them appears at the end of the document. Where more than one abbreviation appears in connection with a specific recommendation, it indicates that the witnesses identified expressed substantially the same viewpoint, or recommendation.

RECOMMENDATIONS RELATED TO SPECIFIC SECTIONS OF THE BILL

Global Change

In all places where Bill 167 speaks of toxic substances being used or created, the words "release," "released" or "releases" should be added as appropriate.

Note: In addition, please see the marked-up copy of Bill 167 submitted by the CCPA, which contains a complete record of the CCPA's recommended amendments.

(CCPA)

Section 1 Purpose

Add to the purposes of the Bill the following:

- promotion of safer alternatives to toxics; and
- application of the precautionary principle and principles of sustainable development to the above goals.

(CELA, RNAO)

Add to the purposes of the Bill the following:

- the reduction or elimination of toxic releases (and not just their use and creation); and
- recognition of Ontarians' right to know the identity and amounts of toxics that are used, created, occur in consumer products or are released into the environment or workplace.

(RNAO)

Amend section 1(a) to read as follows:

- (a) to prevent pollution and protect human health and the environment by reducing the use and creation of toxic questions.

(CCSPA)

Section 2 Definitions

"facility"

Define the term "facility"; a definition should at minimum discuss the nature and size of establishments that will be subject to Bill 167.

(CCSPA)

“substance of concern”

Bill 167 should provide at least a minimal description as to what is the basis for a “concern.”

(CCTFA)

If the purpose of defining substances as “substances of concern” is to report on these substances because they are not on the federal National Pollutant Release Inventory (NPRI), then instead of setting up a separate reporting regime, Ontario should seek to have these substances added to the NPRI.

(CCPA)

Delete the term “substance of concern” as it will be redundant if an appropriate definition of “toxic substance” is included.

(CCSPA)

“toxic substance”

Harmonize the federal/provincial management of toxic substances by amending the definition of “toxic substance” to read as follows:

“toxic substance” means a substance prescribed by the regulations and is consistent with Federal *Canadian Environmental Protection Act, 1999* Schedule 1 list of toxic substances, or has been determined as toxic through applying an equivalent process and criteria as contained under the Federal Chemicals Management Plan, for the purposes of this Act.

(CPPI, SLEA)

Amend the definition of “toxic substance” to read as follows:

“toxic substance” means a substance on Schedule 1 of the *Canadian Environmental Protection Act, 1999* and prescribed by the regulations as a toxic substance for the purposes of this Act.

(CCSPA, CCPA, CME, CPCA, CPIA)

Amend the definition of “toxic substance” to state as follows:

“toxic substance” means:

A substance is toxic if it is entering or may enter the environment in a quantity or concentration or under conditions that

- have or may have an immediate or long-term harmful effect on the environment or its biological diversity;
- constitute or may constitute a danger to the environment on which life depends; or
- constitute or may constitute a danger in Canada to human life or health.

(CVMA)

Section 3 Requirement for toxic substance reduction plans

Threshold of Toxics Used or Created

Reduce the thresholds with respect to amounts used or created to approximately 1% of the National Pollutant Release Inventory thresholds (100kg or lower), and lower the threshold to 50kg for high hazard priority chemicals within five years of implementing the regulations made under Bill 167.

(CCS, ED/USW, OPHA)

Consider lower thresholds than those used by the National Pollutant Release Inventory for substances that are carcinogens, reproductive toxins, persistent or bioaccumulative.

(CELA)

Commit to the goal of comprehensive coverage of toxic production and use, and not just to coverage of a limited number of industries, or to the very large users and creators of toxics. All emitters and users who reach threshold levels must report. Reporting thresholds must be significantly lower than those of the National Pollutant Release Inventory, and they must be lowered over time.

(RNAO)

Provide for the same reporting exemptions as are provided for with respect to the calculation of mass reporting thresholds, as set out in section 3 of Schedule 2 of the *Notice with respect to substances in the National Pollutant Release Inventory for 2008*, dated 16 February 2008.

(CVMA)

Applicable Sectors

Make the requirement of toxic substance reduction plans applicable to all sectors, not just manufacturing and mineral processing.

(CCS, CPIA, OPHA)

Consider having Bill 167 apply to all sectors that report to the National Pollutant Release Inventory, or in the alternative, to any industrial facility that has an approval to emit contaminants to air or deposit them on land under the *Environmental Protection Act* or discharge contaminants to water under the *Ontario Water Resources Act*.

(CELA)

Bill 167 should apply to sewage treatment plants, which are responsible for 87% of mercury, 37% of arsenic, 71% of lead and nearly all chlorine releases into Ontario waterways.

(ED/USW)

Employee Threshold

Reduce the proposed ten-employee standard to a five-employee threshold.

(CCS, OPHA)

Small- and medium-sized businesses should not be exempted from the application of Bill 167. There should be no employee threshold.

(ED/USW)

General

Bill 167 should include provisions for reviewing and lowering reporting thresholds over time.

(TPH)

Section 4(1) Contents of plan

Amend subsection (1), prior to paragraph 1, to read as follows:

4.(1) A toxic substance reduction plan will consider, in accordance with the regulations, the following:

(CVMA)

Subsection (1) should be amended to require a description of material processes at the facility collectively, rather than each substance separately.

(CME)

Recommendations re Specific Paragraphs

Paragraph 1

Add the words "on a risk prioritized basis" to the end of paragraph 1, prior to subparagraph i, to read:

1. Subject to paragraph 2, a statement that the owner or the operator of the facility intends, on a risk prioritized basis

(CPPI)

After subparagraph ii, add a new requirement which will read as follows:

- iii. To reduce the level of emissions of toxic substances for the total facility, on a risk prioritized basis.

(CPPI)

Paragraph 4

The contents of toxic substance reduction plans should be facility-based, not process-based.

(SLEA)

This paragraph should be amended to require a description of material processes at the facility collectively, rather than each substance separately.

(CME)

The processes that are the most significant sources of substances should be considered when developing plans. Amend clause C of subparagraph ii by adding the words "significant processes."

(CME)

Amend this paragraph to read as follows:

4. A description of material processes at the facility that uses or creates the toxic substance, including,

- i. a description of how, when, where and why the substance is used or created, and
- ii. quantifications that,
 - A. were made under section 9 before the plan was prepared,
 - B. were used to prepare the plan, and
 - C. show, as of the time the quantifications were made, how the substance entered the significant processes, whether it was created, destroyed or transformed during the process, and what happened to it after it left the significant processes at the facility.

(CVMA)

Amend this paragraph, prior to subparagraph i, to read as follows:

- 4. A description of the total facility that uses or creates the toxic substance, including,

(CPPI)

Amend subparagraph i to read as follows:

- i. a description of how, when and where the substance is emitted from the total facility, and

(CPPI)

Paragraph 5

Amend this paragraph to read as follows:

- 5. a description and analysis of the options that were considered from an emission risk exposure basis, as warranting reducing the use and creation of the toxic substances at the facility.

(CPPI)

Proposed Paragraph 9

Add a new paragraph 9 to read as follows:

9. Facilities are exempt from complying with Section 4(1) paragraphs 4, 5 and 6 as it relates to the use and processing of raw material feedstocks from nature, such as crude oil, rock, trees. Plans to reduce toxic substances from facilities using raw material feedstocks from nature will be based on reducing the level of toxic substances that are emitted to the air, water and land.

(CPPI)

Other

Include in the contents of the plan a statement of intent to reduce the discharge of toxics to the air, land or water.

(RNAO)

The focus on emissions by toxic substance reduction plans should be based on a scientific evaluation of risk exposure.

(SLEA)

Clarify the definition of "creation" or develop differing requirements depending on the type of facility, focusing on the reduction of use of "toxic substances" in manufacturing articles (consumer products); creation of toxic by-products in the production of "value substances" (those for sale on the market); and release of "value substances" and intermediates into the environment and to humans from production of "value substances." Defined terms should align with those used under the REACH Regulation.

(PP)

Bill 167 should include additional options for managing toxic chemicals other than reducing their use. These options could include environmental performance agreements and management plans developed under the *Canadian Environmental Protection Act, 1999*.

(PP)

Section 8 Summary of Plan

Disclosure to the Public

Summaries should be made public through an easily-searchable and easily-accessible format on the internet. A mechanism should also be in place to answer specific questions the public may not have about toxic substances in their environment.

(CCS, RNAO)

Ensure the public's right to know about toxics in their environment, workplaces and products by collecting all necessary toxics data and making it available in a readily searchable format; and making available not only data collected under Bill 167, but also under all other environmental legislation.

(RNAO)

The information made available to the public should be limited to the risk of exposure to emissions and not the use or presence of toxic substances in a facility.

(SLEA)

Content of Plan Summaries

There should be a mandatory provision requiring employers to share information concerning the health consequences of exposure to toxic substances in the workplace with employees.

(CCS)

Bill 167 should require companies to disclose their actual use, creation and release of toxic substances.

(OPHA)

Section 9 Toxic substance accounting

Specific Amendments

Toxic substance accounting should be done on a total facility level, not on an individual process level. This section should be amended to read as follows:

9. The owner and the operator of a facility who are required under section 3 to ensure that a toxic substance reduction plan is prepared for a toxic substance shall ensure that, for the total facility, the net use and the total emissions of the substance from the total facility are quantified.

(CPPI)

Add a new sentence under section 9 to read as follows:

Facilities are exempt from complying with Section 9 as it relates to the use and processing of raw material feedstocks from nature, such as crude oil, rock, trees. Plans to reduce toxic substances from facilities using raw material feedstocks from nature will be based on reducing the level of toxic substances that are emitted to the air, water and land.

(CPPI)

Amend this section to read as follows:

9. The owner and the operator of a facility who are required under section 3 to ensure that a toxic substance reduction plan is prepared for a toxic substance shall ensure that, for processes at the facility which are significant that uses or creates the substance, the substance is tracked and quantified, in accordance with the regulations.

(CVMA)

Method of Toxic Substance Accounting

Do not dictate what type of toxic substance accounting system a company uses. If a company is already using a recognized accounting method, it should not be required to change.

(CME)

Limit the prescriptive requirement for materials accounting and reporting and allow for other methods (*e.g.*, direct monitoring of emissions, engineering calculations, risk assessments, use of emission factors) as determined by professional judgment.

(SLEA)

Bill 167 needs to utilize the full suite of tools available for reducing the use of toxics. In addition to toxic substance accounting, Bill 167 should provide for the use of root cause analysis and business case for implementation.

(OCETA)

Account Only for Significant Sources

Ensure that only processes which provide significant sources of substances be tracked and quantified.

(CME)

Section 10(3) Information available to public

Add the following sentences to the end of this subsection:

A facility is not required to disclose the use or presence of certain toxic substances, if providing that information publicly is disclosing company proprietary information that could advantage competitors in other jurisdictions, or for cases that would cause increased security concerns. A facility is not required to report the level of toxic substances in products manufactured in Ontario, where that requirement is not applied to products manufactured outside of Ontario and imported for resale in Ontario.

(CPPI)

Section 10(4) Information available to public

To better inform Ontarians about toxic substances, Bill 167 should

- stipulate that information will be available electronically via the internet, and specify a timeline for the launch of such an internet resource;
- require the director to ensure that progress reports are made publicly available via the internet;
- require that information be reported in a user-friendly manner (*i.e.*, geographically, linked with regional maps)—the information should be presented with consistent, interoperable standards such as Canadian Geospatial Data Infrastructure; and
- require that additional contextual information be provided for each toxic substance listed, including the rationale for inclusion on the list, and subsequent management measures taking place at the company—disclosure of management measures used by facilities should be shared amongst facilities to develop “best practices” throughout the industry.

(PP)

The Director should not be permitted to link a toxic chemical to a specific consumer product unless that product has been assessed under the *Canadian Environmental Protection Act, 1999* and determined to be toxic.

(CPIA)

Require the Director, prior to releasing any information publicly, to carry out an economic assessment of potential damage to another substance through misinterpretation by the public of information which the Director releases.

(CPIA)

Section 22(1) Disposition of things seized

Provide scientific criteria for defining a "risk to health" that allow for the disposal of a thing, in accordance with this section, which was seized under section 19.

(CCSPA)

Section 29(6) Absolute liability

This provision should be amended to remove absolute liability and at least provide for a defence of due diligence as is used in the *Canadian Environmental Protection Act, 1999*.

(CCTFA)

Section 31 Appeal of order

Bill 167 should provide a simple procedure for appeals.

(EP)

Section 44 Document prepared for another purpose

Provide equivalency with other certified environmental management systems (EMS) such as ISO 14001 with no changes to the EMS. Provide powers to the Directors to recognize such plans under section 44.

(CME)

Amend section 44 to read as follows:

44. A document that was prepared for another government or for any other purpose may, if it deals with any of the requirements of this Act and the regulations, be used in the preparation of, or as part of, a document required under this

Act, as long as the document meets the intended purpose of this Act and the regulations.

(CVMA)

Section 49(1) Regulations

Prescribing Substances as Toxic Substances or Substances of Concern

More substances should be subject to reduction under Bill 167.

(OPHA)

Commit to the goal of comprehensive coverage of toxics, and not just to coverage of a limited number of toxics.

(RNAO)

Refrain from classifying substances as toxic substances solely on a consideration of their inherent toxicity, without a disciplined consideration of exposure, which is a critical element of full risk evaluation and thoughtful management of chemical substances.

(OMA)

Additional effort should be directed towards listing specific substances. Consider eliminating from Phase 1 some high volume, but relatively less toxic chemicals, such as aluminum and compounds, copper and compounds, and zinc and compounds, which would significantly add to reporting facilities' challenges with relatively less toxics reduction impact. Consider the Massachusetts model, where metals and alloys were excluded from the state's toxic reduction legislation.

(OMA)

Conduct *a priori* assessments of alternatives before classifying substances as toxic.

(OMA)

Provide scientific criteria and processes for the placement or deletion of substances on the lists of toxic substances or substances of concern.

(CCSPA)

The following principles should be considered when defining the approach to developing a list of toxic substances:

- There should be a transparent process that identifies specific criteria or considerations for inclusion on or removal from the list of toxic substances.

- Data and rationales used for determining whether a substance is toxic should be made publicly available.
- Analysis of alternatives to toxic substances should be evaluated using the same criteria as is used for determining whether a substance is toxic—consider using the methodologies developed by the European Union or the Massachusetts Toxics Use Reduction Institute.
- An analysis of the impact on the environment and human health from the use of an alternative substance or substitute for a toxic chemical should be required in addition to the feasibility study.
- Where assessment is pending for substances of concern, and to substitutes for toxic substances, the precautionary principle should be applied and careful consideration given to the potential impact on human health and the environment.
- The government should consider the approaches and decisions of other jurisdictions, such as those of the European Union under the REACH Regulation. Mechanisms should be included in Bill 167 to encourage the consideration of new data generated under the REACH Regulation.
- Consider an analysis of substance life-cycles for substances that, while inherently toxic, have a low risk of exposure (*e.g.*, nickel).

(PP)

Upon the initial receipt of data on substances of concern, the Minister should be required to take action upon assessing the information. Possible actions may include designating the substance as a toxic substance, removal of the substance from the list of substances of concern or developing an alternative strategy within a fixed time frame.

(PP)

The government's proposed list of toxic substances should be expanded to include toxic chemicals under the *Canadian Environmental Protection Act, 1999*, even if they are not listed under the National Pollutant Release Inventory, and should automatically be updated to include chemicals recognized by the International Agency for Research on Cancer and toxics under California's *Safe Drinking Water and Toxic Enforcement Act* (Proposition 65).

(ED/USW)

Regulatory Approaches

Regulations made under Bill 167 should be

- science-based;
- collaborative and compatible with the federal government regulations under the *Canadian Environmental Protection Act, 1999* and Bill C-6 (the *Canada*

Consumer Product Safety Act), without duplication and extra burdens on business;

- based on an economic cost/benefit analysis conducted prior to the coming into force of regulations; and
- required to demonstrate that they will lead to an improvement in health or safety outcomes.

Any use of terms such as “green” or “better alternative” should be backed by science, not subjectively used to sound like an improvement.

(CCSPA)

Regulations should take into account the goals and objectives of other government initiatives such as the Open for Business campaign and budget commitments such as the 25% reduction in regulatory burden.

(CPCA)

Combining Facilities

Clarify or delete s. 49(1)(b), which permits the Minister to combine “related” facilities to define them as a “single facility,” even if they have different owners or operators.

(CCSPA)

Sections 50 to 64

Delete these provisions of Bill 167.

(CCPA)

Section 64, amending s. 49(1) Regulations

Coming Into Force

Bring this section into force at the same time that s. 49(1) comes into force.

(RNAO)

Scope of Substances Regulated

Within one year of the passage of Bill 167, the government should identify priority substances and products for regulation, using a precautionary approach. Early action should focus on formaldehyde, lead, vinyl chloride, bis(2-ethylhexyl) phthalate and bisphenol A.

(ED/USW)

Consumer Product Labelling

All ingredients in consumer products should be fully disclosed on product labels. If carcinogens are present in products, they should be identified by a hazard symbol. The full ingredient list and hazard symbol should be visible to the consumer at point of sale and at point of use and presented in clear language.

(CCS, OPHA, RNAO)

The application of Bill 167 to consumer products should be clarified. At a minimum, Bill 167 should authorize labelling and warnings with respect to toxic substances in consumer products where the substances are capable of causing or have effects such as reproductive toxicity.

(CELA)

Exempt vehicles from the consumer protection provisions of Bill 167, as they are already covered by federal legislation. Add to section 64 a schedule similar to Schedule 1 of Bill C-6 (the *Canada Consumer Product Safety Act*) setting out those consumer products that are exempt from regulation under this provision.

(CVMA)

Bill 167 should include timelines for identifying priority substances and consumer products for regulation and labelling.

(TPH)

Require a risk-based approach to product regulation including consideration of both inherent toxicity and exposure pathways, and requiring consultation with affected parties prior to public notice of the intent to regulate.

(CAC/SMC)

Alternatives to Section 64

This provision should be deleted from Bill 167; in the alternative, consumer products and their ingredients already regulated under the federal *Food and Drugs Act* and *Canadian Environmental Protection Act, 1999* should be specifically exempted.

(CCTFA)

The authority to ban or restrict the manufacture, distribution or sale of a product known to contain a toxic substance should be vested in the federal government to avoid the Balkanization of the Canadian marketplace.

(CPPI)

Delete subparagraph (ii) from the proposed amendment to s. 49(1).

(CCSPA)

OTHER RECOMMENDATIONS

Communication Along the Supply Chain

There should be communication from producers and importers to their downstream users (customers) and vice versa. Safe use guidelines, including risk management measures and operational conditions should be identified and shared amongst the entire supply chain.

(PP)

Confidential Information

Bill 167 should clearly state that manufacturers' confidential information will not be disclosed to competitors.

(CME)

Conflict with Other Laws

In the event of conflicts between Bill 167 and municipal bylaws or other provincial environmental legislation, allow the provision which is the most protective of health or the environment to prevail.

(CELA, RNAO)

Duplication Concerns

Provide equivalency with other certified environmental managements systems (EMS) such as ISO 14001 without requiring changes to the EMS and provide powers to the Ministry Directors to recognize such plans under Bill 167.

(CVMA)

Harmonize Bill 167 with the federal Chemical Management Plan.

(APMA, CPCA)

Harmonize Bill 167 with the *Canadian Environmental Protection Act, 1999*.

(CPIA)

Formally recognize the potential for overlap and duplication with federal efforts including the federal Chemical Management Plan and the *Canadian Environmental Protection Act, 1999*, and provide the Minister of the Environment with a specific directive to avoid overlap and duplication.

(CAC/SMC)

European Union REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) Regulation

Strengthen Bill 167 to account for the impact of the European Union's *REACH* regulation and other jurisdictions' chemical management plans so that Ontario's industries meet *REACH* standards and can export to Europe.

(CCS)

Funding for a Toxics Reduction Strategy

The toxics reduction strategy and its related institutions should be funded by fees levied on the regulated community.

(CCS, CELA, PP, RNAO)

The funding formula should be based on use and emission, with the weighting towards emissions.

(RNAO)

The \$24 million allocated by the Ministry of the Environment is not sufficient. Other ministries, especially the Ministry of Research and Innovation, need to be proactive in supporting the toxics reduction strategy. Support efforts by the Ministry of Research and Innovation to increase resources for university, government and industry research, including support to existing industries to accelerate the commercialization and marketing of new products that reduce the use of toxics.

(OBAC)

Independent Legal Review of Bill 167

There should be an independent legal review of the key provisions of Bill 167, as the rolling incorporation provision in s. 49(2) means that a change in a document outside of the regulations becomes incorporated into the regulations with no political oversight, and critical definitions and criteria related to the operation of the Bill have not been established.

(CCSPA)

Monitoring Program

Commit to an integrated monitoring program for toxic substances in the environment (*i.e.*, water, air and soil) and the human population (*i.e.*, biomonitoring) to identify where further action will be required to prevent pollution and protect human health and the environment.

(PP)

Pre-Impact Safety Valve

Bill 167 should include a pre-impact safety valve to identify and notify those who may be adversely impacted by the designation of substances as being toxic substances or substances of concern.

(EP)

Proposed Amendment to *Occupational Health and Safety Act*

Reinstate s. 36 of the *Occupational Health and Safety Act (OSHA)*, which was repealed in 2001; this provision required employers to inventory the chemicals they used on an annual basis. Mandate that joint health and safety committees (established under *OSHA*) consider alternatives or substitutes to toxic chemicals (as is done under British Columbian and federal law) and require an employer to report to the joint committee and the Minister of Labour on the progress achieved with respect to the removal of toxic chemicals from the workplace.

(ED/USW)

Proposed Preamble

Include in the preamble an endorsement of the principles of the *Canadian Environmental Protection Act, 1999*—specifically the precautionary principle, pollution prevention, virtual elimination of persistent and bioaccumulative toxic substances, and the “polluter pays” principle.

(RNAO)

Reduction Targets

Bill 167 should include goals or targets for reducing the use and release of toxic substances in Ontario.

(CCS, ED/USW, PP, TPH)

Include aggressive targets for reductions in the use, creation and release of toxics, including:

- a 50 % reduction in toxic releases within five years of Bill 167 coming into force;
- a 20 % reduction in toxic use within five years; and
- a 40 % reduction in toxic use within ten years.

(RNAO)

Bill 167 should set a target of reducing the use, creation and release of toxics by 50% within 5 years.

(CELA, OPHA)

Reduction targets should be renewable.

(OPHA, PP)

Role of the Public

To enhance the role of the public, Bill 167 should be amended to provide for the following:

- the public's right to know information, beyond what is contained in the summaries of toxics reduction plans (as prescribed by s. 4 of the Bill), compiled under the authority of existing environmental laws;
- the public's right to apply to the Minister for review of toxics use reduction (and safe alternative) plans, or in the alternative, amendment of the *Environmental Bill of Rights, 1993 (EBR)* to ensure that such plans are included in the definition of "instruments," and therefore, subject to review under the *EBR*; and
- a public right of action to enforce key provisions of Bill 167.

(CELA)

Sector-Specific Approach

Include specific provision for a sector-based approach that includes risk-based prioritization of substances.

(CAC/SMC)

Substitution of Safer Alternatives

Substitution should be mandated in situations where a safer alternative exists or where the use is non-essential, as is now required under the European Union's *REACH* regulation.

(CCS, CELA, ED/USW, OPHA, PP, RNAO)

The Minister should be able to create a schedule listing specific substances to be reduced, as well as suggested alternative substances acceptable to the Minister. The Minister should certify that suggested alternatives are approved for use by Health and Environment Canada, do not have greater risks than the substance they are replacing, and perform as ingredients as portrayed.

(CCTFA, ED/USW)

The Minister should be able to create a schedule listing specific substances to be reduced, as well as suggested alternative substances acceptable to the Minister. There must be a substitution assessment framework and methods for evaluating alternatives.

(Diamond)

There should be mandatory phase-outs or substitution of high-hazard substances. The provisions for regulating such substances should ensure that the process for doing so is open, be subject to regular review so the list of substances reflects scientific developments and have specific dates for companies to achieve elimination or substitution of high-hazard substances.

(TPH)

Technical Assistance Programs

Bill 167 should establish a regime to provide technical assistance to employees who require re-employment assistance, vocational retraining or other assistance as a result of the implementation of the Bill.

(CELA)

Bill 167 should establish a regime to provide technical and financial assistance to small businesses, regardless of whether they are subject to Bill 167, that require assistance in reducing their use of toxic substances.

(CELA)

Capacity building under Bill 167 should support small- and medium-sized facilities that use and release priority substances under National Pollutant Release Inventory thresholds.

(TPH)

Toxic Use Reduction Institute

The government should establish an independent university-based research Toxic Use Reduction Institute (TURI) to advance the province's capacity for toxic use reduction activities, safe substitution, green chemistry, education and information outreach and training on toxics reduction planning. TURI should provide mandatory training on toxics reduction plans and offer training and certification for toxics reduction planners.

(CCS, CELA, Diamond, ED/USW, OPHA, PP, RNAO, TPH)

A third-party institute should be established to work with industry and government to research and develop toxic reduction strategies and outreach. It should coordinate information sharing and encourage research and development in partnership with industry. It should foster the sharing of solutions and case studies in a Web 2.0 environment through an efficient and logical data collection process, and assist manufacturers with Environmental Value Stream Mapping.

(APMA)

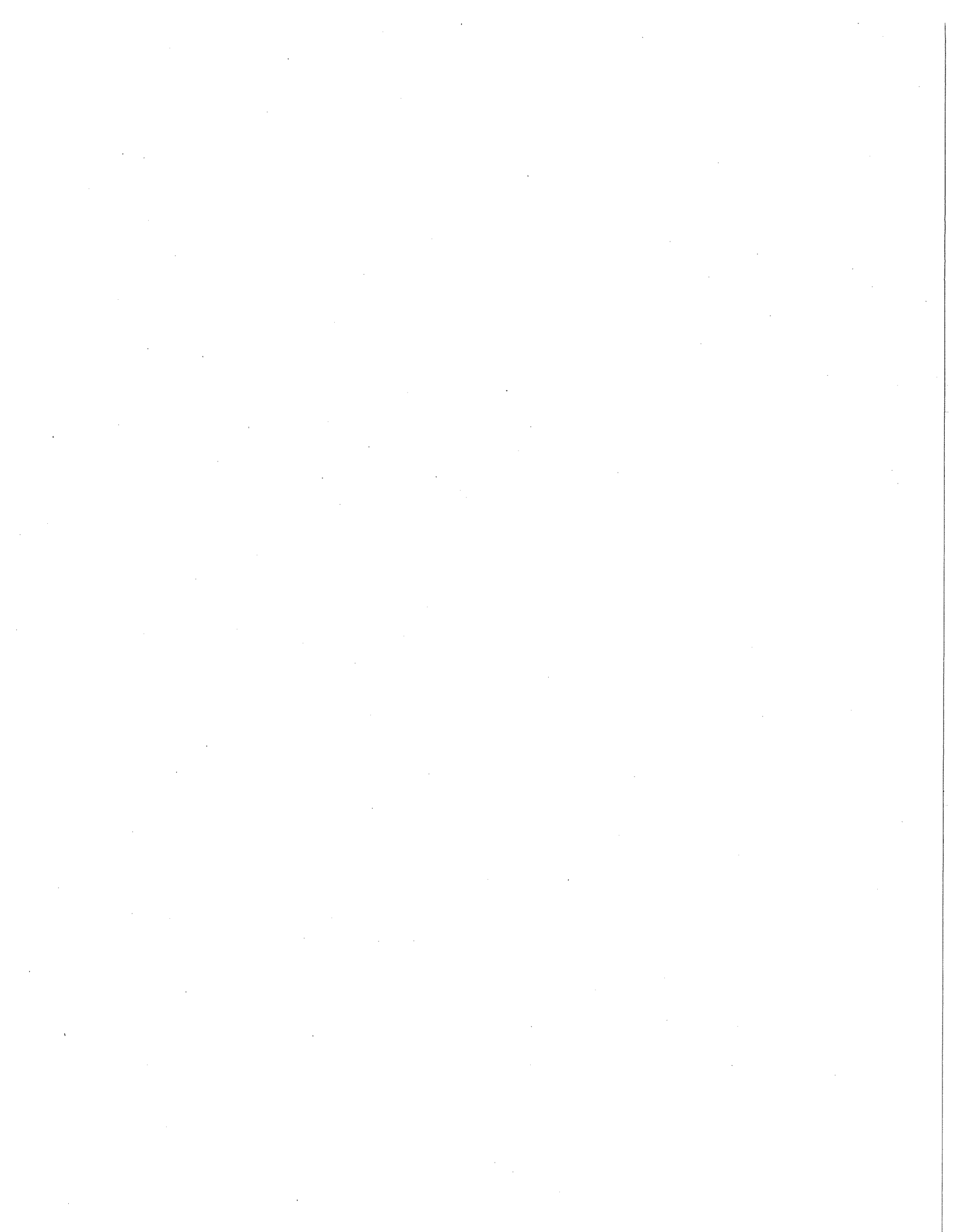
Toxic Use Reduction Planners

The role of toxic use reduction planners should be expanded and specifically linked with water and energy conservation.

(ED/USW)

WITNESS LIST

Abbreviation	Organization/Individual	Date of Appearance
APMA	Automotive Parts Manufacturers' Association	25 May 2009
CAC/SMC	Cement Association of Canada/St. Marys Cement	25 May 2009
CCS	Canadian Cancer Society, Ontario Division	13 May 2009
CCPA	Canadian Chemical Producers' Association	25 May 2009
CCSPA	Canadian Consumer Specialty Products Association	25 May 2009
CCTFA	Canadian Cosmetic, Toiletry and Fragrance Association	13 May 2009
CELA	Canadian Environmental Law Association	13 May 2009
CME	Canadian Manufacturers and Exporters	25 May 2009
CPCA	Canadian Paint and Coating Association	25 May 2009
CPIA	Canadian Plastics Industry Association	25 May 2009
CPPI	Canadian Petroleum Products Institute	13 May 2009
CVMA	Canadian Vehicle Manufacturers' Association	25 May 2009
Diamond	Miriam Diamond	25 May 2009
ED/USW	Environmental Defence/United Steelworkers	13 May 2009
EP	Environmental Plastics	25 May 2009
OBAC	Ontario BioAuto Council	25 May 2009
OCETA	Ontario Centre for Environmental Technology Advancement	25 May 2009
OMA	Ontario Mining Association	25 May 2009
OPHA	Ontario Public Health Association	13 May 2009
PP	Pollution Probe	25 May 2009
RNAO	Registered Nurses Association of Ontario	13 May 2009
SLEA	Sarnia Lambton Environmental Association	13 May 2009
TPH	Toronto Public Health	25 May 2009



Legislative
Assembly
of Ontario



Assemblée
législative
de l'Ontario

Ontario Legislative Library
Research and Information Services
Room 2520, Whitney Block
Queen's Park
Toronto, Ontario M7A 1A9
Telephone: (416) 325-3675
Facsimile: (416) 325-3696

Bibliothèque de l'Assemblée législative de l'Ontario
Services de recherches et d'information
Bureau 2520, Edifice Whitney
Queen's Park
Toronto (Ontario) M7A 1A9
Téléphone: (416) 325-3675
Télécopieur: (416) 325-3696

090094

May 28, 2009

MEMORANDUM TO: Standing Committee on
General Government

FROM: Marta Kennedy
Research Officer

SUBJECT: **Background Information on Bill 167,
the *Toxics Reduction Act, 2009***

The Standing Committee on General Government is currently holding public hearings on Bill 167, the *Toxics Reduction Act, 2009*.

After a presentation by the Ontario Mining Association, the Committee requested that the Legislative Research Service provide a copy of a review done in Massachusetts that lead to the exclusion of metals and alloys from the Massachusetts *Toxics Use Reduction Act* (Massachusetts TURA). A copy of this document was provided by the Ontario Mining Association to the Legislative Research Service and is attached.

The Committee also asked for a memorandum that specified the reasons for removing metals and alloys from the Massachusetts TURA.

This memo includes information about alloys that have been removed from the application of the Massachusetts TURA. It appears, though, that certain metals may still be subject to that Act. We are awaiting confirmation on this and will provide a follow-up memo once we receive further information.

MASSACHUSETTS TOXICS USE REDUCTION ACT

The Massachusetts *Toxics Use Reduction Act* was signed into law by the Governor of Massachusetts on July 24, 1989.¹ The legislation requires Massachusetts companies that use large quantities of specific toxic chemicals to evaluate pollution prevention opportunities, implement them if practical, and measure and report their results every year. Companies must also evaluate their efforts and update their toxics use reduction plans every other year. The chemicals that must be reported are those on the Toxic or Hazardous Substances List established pursuant to the Massachusetts TURA.²

Delisting of certain alloys from the Massachusetts Toxic or Hazardous Substances List

The Toxic or Hazardous Substances List (Substances List) was originally created from two federal lists: the Toxics Release Inventory (TRI) list created by the *Emergency Planning and Community Right to Know Act* and the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) list.³ Substances on the CERCLA list originate from four other U.S. federal regulatory lists: the *Clean Air Act* list of hazardous air pollutants (HAPs), the *Clean Water Act* list of hazardous substances and priority pollutants, the *Solid Waste Disposal Act* list of hazardous wastes, and the *Toxic Substances Control Act* list of substances that pose an imminent hazard.⁴

A person may petition the Science Advisory Board (SAB) for the delisting of a chemical from the Substances List. The SAB was established under the Massachusetts TURA to make recommendations with respect to the addition and deletion of substances from the Substances List. The SAB considers the petition and makes recommendations to the Administrative Council on whether to add or remove a substance from the list. The Administrative Council is the governing body of the Massachusetts TURA program and has the power to officially list or delist substances.⁵

¹ Massachusetts, Department of Environmental Protection, *Fact Sheet: About the Toxics Use Reduction Act (TURA) Program*, Internet site at <http://www.mass.gov/dep/toxics/turafact.pdf>, accessed 27 May 2009.

² Massachusetts Department of Environmental Protection, "Toxics Use Reduction Act (TURA) Program Overview," Internet site at <http://www.mass.gov/dep/toxics/tura/turaover.htm>, accessed 26 May 2009.

³ *Massachusetts Toxics Use Reduction Act*, Mass. Gen. Laws ch. 21I, § 9(A)-(B) (2009), Commonwealth of Massachusetts, General Court, Internet site at <http://www.mass.gov/legis/laws/mgl/21i-9.htm>, accessed 26 May 2009.

⁴ Massachusetts Toxics Use Reduction Institute, *Policy Analysis: Recommendations on CERCLA chemicals that have never been reported by TURA filers* (Lowell, MA: Massachusetts TURI, 2008), 2. TURI Internet site at http://www.turi.org/policy/ma_tura_program/tura_administrative_council/recent_council_considerations/policy_analyses_for_cercla_chemicals/policy_analysis_for_cercla_chemicals_never_reported_under_tura/non_reported_cercla_chemicals, accessed 27 May 2009.

⁵ Administrative Council on Toxics Use Reduction, *Toxics Use Reduction in Massachusetts* (Massachusetts: Administrative Council on Toxics Use Reduction, November 2008). TURI Internet site at http://www.turi.org/policy/ma_tura_program/tura_report_to_governor_patrick, accessed 26 May 2009.

Effective 1995, the following alloys were delisted:

copper, nickel, chromium, cobalt or manganese in a solid or molten metal alloy, but not including aerosols, where aerosols are defined as particles less than 50 um (microns) in diameter.⁶

An alloy is

a substance possessing metallic properties and composed of two or more elements of which at least one must be a metal. The term refers to those cases where there is an intentional addition to a metal for the purpose of improving certain properties.⁷

The *Guidance Document: Reporting and Planning for Certain Metal Alloys*, produced by the Massachusetts Department of Environmental Protection, says

the delisting covers metal alloys in solid or molten form, such as copper in bronze and brass, and nickel and chromium in stainless steel.

This delisting does not extend to dissolved metals, metal alloys in aerosol form, metal alloy particles less than 50 microns in diameter, or any of the five metals in non-alloy form; i.e., a metal containing a low level of impurities is NOT an alloy. For example, wire comprised of 99+% copper and less than 1% impurities is considered to be essentially pure copper, and not an alloy.

The use of metals in pure form can be subject to reduced TURA reporting requirements and exempted from TURA planning and fees provided specific requirements are met.

Detailed information on this expanded article exemption can be found in the "BWP 94-014 Policy for TURA Reporting and Planning for Certain Metalworking Operations" and the

⁶ *Toxic or Hazardous Substance List*, 301 Mass. Code Regs. 41.03(1)(a) (2009), Executive Office of Energy and Environmental Affairs Internet site at http://www.mass.gov/Eoeea/docs/eea/ota/tur_prog/301cmr41_toxic_haz_sub_list.pdf, accessed 27 May 2009.

⁷ Massachusetts Toxics Use Reduction Institute, *Glossary*, s.v. "alloy," TURI Internet site at <http://www.turi.org/turadata/glossary/alloy>, accessed 27 May 2009.

“Recycling Activity Report Form.”⁸ [emphasis added]

The *Policy for TURA Reporting and Planning for Certain Metalworking Operations* is attached as Appendix B. The *Guidance Document: Reporting and Planning for Certain Metal Alloys* is attached as Appendix A.

The delisting of these alloys is mentioned in the review referred to by the Ontario Mining Association, *Categorization of the Toxics Use Reduction List of Toxic and Hazardous Substances*.⁹ Note, though, that this document deals only peripherally with the delisting of these alloys.

Sterling silver alloy and silver in alloy form have also been delisted.¹⁰

The following table summarizes the delisting decisions made to date with respect to alloys. All but two delisting were the result of industry petitions.

Summary of Delisting Decisions ¹¹			
Chemical	SAB Recommendation	Supplemental Information	Status or Outcome
Nickel in alloy form	delist except for aerosols (less than 50 um)	Unanimous vote. Aerosols should be reported under TURA because planning for efficient use is beneficial.	Delisting petition request accepted by Admin Council per TURI/SAB recommendation.
Chromium in alloy form	delist except for aerosols (less than 50 um)	Unanimous vote. Aerosols should be reported under TURA because planning for efficient use is beneficial.	Delisting petition request accepted by Admin Council per TURI/SAB recommendation.
Copper in alloy form	delist except for aerosols (less than 50 um)	Unanimous vote. Aerosols should be reported under TURA because planning for efficient use is beneficial.	Delisting petition request accepted by Admin Council per TURI/SAB recommendation.
Manganese in alloy form	delist except for aerosols (less than 50 um)	Unanimous vote. Aerosols should be reported under TURA because planning for efficient use is beneficial.	Delisting petition request accepted by Admin Council per TURI/SAB recommendation.

⁸ Massachusetts Department of Environmental Protection, *Guidance Document: Reporting & Planning for Certain Metal Alloys* (Massachusetts: Mass DEP, 1995), Internet site at <http://www.mass.gov/dep/toxics/laws/metals.htm>, accessed 27 May 2009.

⁹ Massachusetts Toxics Use Reduction Institute, *Categorization of the Toxics Use Reduction List of Toxic and Hazardous Substances. Methods and Policy Report No. 18* (Lowell, MA: Massachusetts TURI, 1999), 3.

¹⁰ *Toxic or Hazardous Substance List*, 301 Mass. Code Regs. 41.03(1) (2009).

¹¹ Email, Policy Analyst, Massachusetts Toxics Use Reduction Institute, 27 May 2009.

Summary of Delisting Decisions ¹¹			
Chemical	SAB Recommendation	Supplemental Information	Status or Outcome
Cobalt in alloy form	delist except for aerosols (less than 50 um)	Unanimous vote. Aerosols should be reported under TURA because planning for efficient use is beneficial.	Delisting petition request accepted by Admin Council per TURI/SAB recommendation.
Sterling silver alloy	delist copper-silver alloys except for aerosols (less than 50 um)	Unanimous vote. Aerosols should be reported under TURA because planning for efficient use is beneficial.	Delisting petition request accepted by Admin Council with qualifications as per TURI/SAB recommendation.
Copper in alloy form	delist except for aerosols (less than 50 um)	Reconsideration. Delisting originated in SAB to be consistent with previous decisions. Unanimous vote. Aerosols should be reported under TURA because planning for efficient use is beneficial.	TURI/SAB recommendation accepted by Admin Council
Silver in alloy form	delist except for aerosols (less than 50 um)	Delisting originated in SAB to be consistent with previous decisions. Unanimous vote. Aerosols should be reported under TURA because planning for efficient use is beneficial.	TURI/SAB recommendation accepted by Admin Council

Process for delisting substances

Currently, the SAB considers the following information before making a recommendation to the Administrative Council for the delisting of a substance:

- International Agency for Research on Cancer rating,
- data from the Environmental Protection Agency PBT Profiler (persistence in water, soil, sediment, and air; bioconcentration factor; and chronic toxicity in fish),
- neurotoxicity,
- developmental/reproductive toxicity,
- mutagenicity,
- lethal dose or concentration information (LD50 and LC50),
- exposure limits required or recommended by U.S. federal agencies,
- flash point.¹²

¹² Massachusetts Toxics Use Reduction Institute, *Policy Analysis: Recommendation to take no action on certain CERCLA chemicals that have been reported by TURA filers* (Lowell, MA:

However, only limited information is available about the process the delisted alloys actually went through before being delisted. Whether these factors were considered before SAB made its recommendation to the Administrative Council is unknown at present. What is clear is that the SAB of the time unanimously voted to recommend delisting of these alloys, and the Administrative Council accepted their recommendations.

APPENDIX A

GUIDANCE DOCUMENT: TURA REPORTING AND PLANNING FOR CERTAIN METAL ALLOYS¹³

The following substances have been delisted from the Toxics and Hazardous Substance List (301 CMR 41.00) effective reporting year 1995:

Copper, nickel, chromium, cobalt or manganese in a solid or molten metal alloy, but not including aerosols, where aerosols are defined as particles less than 50 um (microns) in diameter.

Questions have been raised regarding implementation of this delisting. This guidance has been produced to assist the regulated community in complying with TURA. If you have any remaining questions after reading this document, please contact the Department of Environmental Protection (MassDEP) for compliance assistance or the Office of Technical Assistance for further information.

General Information

For the purposes of determining what a metal alloy is, a useful definition of a metal alloy is given by "An Encyclopedia of Metallurgy and Materials" (MacDonald and Evans, 1984):

"An alloy is a substance possessing metallic properties and composed of two or more elements of which at least one must be a metal. The term refers to those cases where there is an intentional addition to a metal for the purpose of improving certain properties."

The delisting covers metal alloys in solid or molten form, such as copper in bronze and brass, and nickel and chromium in stainless steel.

This delisting does not extend to dissolved metals, metal alloys in aerosol form, metal alloy particles less than 50 microns in diameter, or any of the five metals in non-alloy form; i.e., a metal containing a low level of impurities is NOT an alloy. For example, wire comprised of 99+% copper and less than 1% impurities is considered to be essentially pure copper, and not an alloy.

The use of metals in pure form can be subject to reduced TURA reporting requirements and exempted from TURA planning and fees provided specific requirements are met. Detailed information on this expanded article exemption can be found in the "BWP 94-014 Policy for TURA Reporting and Planning for Certain Metalworking Operations" and the "Recycling Activity Report Form". Both of these documents can be obtained from MassDEP by calling the TURA Program at 617-292-5982.

The 50 micron size which describes metal alloy aerosols and particles refers to the particle size of the metal alloy, not the particle size of the individual listed metals.

Specific Process Questions

The following sections provide guidance for specific processes in which metal alloys are used:

- **Etching processes.** When a metal is removed from the metal alloy stock through chemical processing, the resultant metal salt is reportable if it is produced in threshold quantities (in this case, the metal salt is "coincidentally manufactured"). The 25,000 pound threshold would apply if the metal salt is the only reportable chemical; the threshold drops to 10,000 pounds if a facility is using other reportable chemicals. It should be noted that the entire weight of the metal salt is considered when determining

¹³ Massachusetts Department of Environmental Protection, *Guidance Document: TURA Reporting and Planning For Certain Metal Alloys* (Massachusetts: Massachusetts DEP, n.d.), Massachusetts DEP Internet site at <http://www.mass.gov/dep/toxics/laws/metals.htm>, accessed 27 May 2009.

whether a threshold has been met, and not just the amount of the metal in the salt. The stock itself, if it is a metal alloy as defined above, is not reportable.

- **Electropolishing operations.** The metal salts in solution are reportable as "coincidentally manufactured" if they are produced in threshold quantities. Again, the stock itself, if it is a metal alloy as defined above, is not reportable.
- **Grinding Operations.** The listed metals are not exempt from reporting when contained in aerosols of a metal alloy, i.e., particles less than 50 microns in diameter (in this case, the metal is reported as "processed"). These metals are reportable if they are present in a metal alloy aerosol in threshold quantities. When determining whether the reporting threshold has been exceeded, only the weight of the listed metal is considered, and not the total weight of metal alloy aerosol. The stock itself, if it is a metal alloy as defined above, is not reportable.
- **Multiple processes.** In a production unit where the metal alloy stock is being used in several different processes, none of the stock is reportable if it is a metal alloy as defined above. However, the individual production processes may produce metal alloy in aerosol form or metal salts in solution. Those aerosols and metal salts in solution would be reportable if produced in threshold quantities, as described above.
- **Alloys in powdered form.** If a metal alloy is used in particle form, the facility will need to perform a particle size analysis to determine the amount of material less than 50 microns in size. The listed metals (e.g., Cr, Cu) are reportable if they are present in metal alloy particles less than 50 microns in size in threshold quantities. When determining whether the reporting threshold has been exceeded, only the weight of the listed metal is considered, and not the total weight of metal alloy particles.

APPENDIX B

POLICY FOR TURA REPORTING AND PLANNING FOR CERTAIN METALWORKING OPERATIONS¹⁴

Bureau of Waste Prevention
Policy BWP-94-014
Signed by Steve DeGabriele for
Patricia Deese Stanton, Assistant Commissioner
on June 8, 1994

1. POLICY STATEMENT

This document sets forth the DEP's policy [Endnote 1] regarding reduced reporting requirements and exemption from TURA planning and fees for specified metals and metal alloys processed in certain metalworking operations, including but not limited to processes involving bending, cutting, stamping, and extruding.

The reduced reporting provisions and the exemption from planning and fees may be claimed only for those metals specified in Part A of this policy and only when the metalworking operation meets the conditions, requirements, and procedures set forth, respectively, in Parts B, C and D of this policy.

A. Applicability

1. This policy applies only to copper and its alloys, and steels including stainless steel.
2. This policy applies only where a metal is processed; the policy does not apply to metals that are manufactured or otherwise used. [Endnote 2]
3. This policy does not apply to (a) metallic compounds, (b) metals or metal alloys not specified in paragraph 1(a) above or (c) lead even if the lead is a constituent of an alloy listed in paragraph 1(a).

B. Conditional Exemption and Reduced Reporting for Certain Metals

DEP will allow reduced reporting and an exemption from TURA planning and fees for a metal covered by this policy *when the following conditions are met for each metal claimed under this policy.*

1. The metal must be an "input" to a process.
2. While the physical form or shape of the metal may change during processing, the metal must remain solid and the other properties of the metal, including its chemical properties, must not change.
3. Except for transfers of the metal as a commodity or item with value to scrap metal brokers or other recycling or reuse operations, the handling, storage, and processing activities at the facility must result, on a calendar year basis, in no releases [Endnote 3] of the metal to the environment as reportable in the following sections of the Form R: Sections 5 (**RELEASES OF THE TOXIC CHEMICAL TO THE ENVIRONMENT ON-**

¹⁴ Massachusetts Department of Environmental Protection, *Policy For TURA Reporting and Planning For Certain Metalworking Operations* (Massachusetts: Massachusetts DEP, 1994), Massachusetts DEP Internet site at <http://www.mass.gov/dep/toxics/laws/metals.htm>, accessed 27 May 2009.

SITE) and Section 6 (TRANSFERS OF THE TOXIC CHEMICAL IN WASTES TO OFF-SITE LOCATIONS).

4. The scrap metal generated by the metalworking operation must be collected under a "comprehensive and aggressive" recycling program as described by EPA. [Endnote 4] The scrap metal must also be sent without treatment or further processing -- except mechanical separation processing -- to a scrap metal broker or other recycling or reuse operation.
5. The toxics user must comply with the reporting requirements described below.

C. Reporting Requirements

1. For each metal that the toxic user seeks to have covered under this policy, the toxic user shall complete and submit to the Department: a Form R, a Form S Cover Sheet, and Section 1 of the Form S. (Completion of sections 2 and 3 of the Form S will not be required if all the conditions of this policy are met.) In Section 1, the user shall report as separate items the amount of metal shipped in or as product and the amount shipped as scrap. The certification statement in the Form S Cover Sheet shall apply not only to the Form S and Form R information but also to the information described in paragraph 2 below.
2. *Recycling Activity Report Form:* The toxics user shall provide, on a form specified by DEP, such additional information necessary to demonstrate that the metalworking operation satisfies the conditions of this policy. Such information shall include, but not be limited to:
 - i. a description of the steps taken, if any, to minimize the production of scrap metal, and metal disposed of, treated, or otherwise released to the environment;
 - ii. a statement that the scrap metal was sent without treatment or further processing -- except mechanical separation processing -- to a scrap metal broker or other recycling or reuse operation.
 - iii. a description of the toxic user's recycling or reuse strategy sufficient to demonstrate that this strategy is "comprehensive and aggressive." This description shall include, without limitation, the following information:a) methods employed for collecting the metal for recycling or reuse and ensuring that all discernable metal particles are so collected; b) the methods of storing and handling of the scrap metal prior to recycling or reuse; c) the name(s) and address(es) of the scrap metal broker or other recycling or reuse operation as well the type of operation(s) to which the scrap metal was transferred (unless this information was reported in the Form R); d) information to substantiate the commodity-like nature of the scrap metal, e.g., information indicating that the scrap metal has value.

D. Procedure for Modified Reporting, and Planning and Fee Exemption, for Metalworking Operations

1. The toxic user shall submit to the Department the Form R and Form S documents described above on or before July 1st for each prior calendar year for which the user seeks to proceed under this policy. The first page of the Form S Cover Sheet and Form S shall be clearly marked "**submitted under the provisions of BWP Policy-94-014.**"
2. The toxic user shall submit to the Department the Recycling Activity Report Form described above on or before July 1st for the first prior calendar year for which the user seeks to proceed under this policy. This form need not be submitted annually; provided,

however, that if a change occurs in the toxic user's recycling operations that would make it less aggressive and comprehensive, the toxic user shall so notify the Department. [Endnote 5]

3. Any toxic user seeking to claim confidentiality of information in the documents submitted under this policy shall follow the procedures set forth in 310 CMR 3.30.
4. If the Department determines, based on information in the reports submitted under this policy or other relevant information, that the metal does not qualify under this policy, then the Department shall so notify the toxic user in writing, and the toxics user shall submit to DEP a toxics use report, develop a plan and pay applicable fees by the deadline specified in the written notice.
5. This policy is based on information available to the Department as of the date of the policy. Should additional information indicate a need to repeal or modify the policy, the Department may take such action but any repeal or modification of this policy shall be effective for the calendar year reporting period following the calendar year in which the repeal or modification occurs.

2. BACKGROUND STATEMENT

A. Problem Definition

In part, this policy relies on the rationale behind the "article exemption" [Endnote 6] to establish the appropriate level of regulation for certain metals. Under the article exemption, toxic chemicals contained in articles are not regulated under TURA. Because, in general, an article is a discrete item when it enters the facility, and remains so during its normal use at the facility, the environmental and public health risks of a toxic substance contained in an article are generally less than the use of same toxic substance when it is not contained in an article.

Many metals that would otherwise qualify under the article exemption fail to do so because the processing of the item involves a change in shape. The DEP believes, if the conditions in this policy are met, that certain uses of the metals specified in the applicability section of this policy pose a risk similar to the reduced risk posed by metals in an article.

This is not to say, however, that there are no risks associated with metal use. For example, mining, manufacture, smelting, and general handling of metals may pose issues of concern. The DEP believes that these risks must continue to be assessed, and that, consistent with TURA and EPCRA, the public has a right to information about metal use. The level of reporting required under this policy will allow the continued assessment of risks associated with metals, and will provide the public with information about metal use.

In addition, this policy seeks to encourage metal reuse and recycling by requiring an "aggressive and comprehensive" strategy for metal reuse and recycling in order to qualify for the planning and fee exemption. While reuse/recycling, under these circumstances is NOT toxics use reduction as defined in TURA, it is beneficial as a resource conservation measure. Furthermore, although the remelting of scrap metal may entail certain risks, it does not involve the handling of ores that can contain such toxics as arsenic (in copper ores).

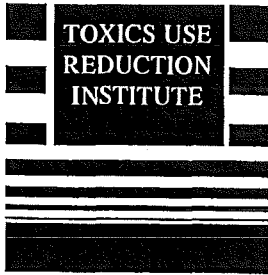
- B. **Implementation and Evaluation** The information in these modified reports will provide a clearer picture of metal use in Massachusetts, and will allow the agencies responsible for implementing TURA to continue to assess risks associated with metal use throughout its lifecycle. The modified reports will be publicly available, as are toxics use

reports. The DEP will collect and manage data from the reports in a manner consistent and compatible with data from toxics use reports.

ENDNOTES:

1. While this policy is based on certain concepts and conditions found in the article exemption, this policy does not change the definition of "article" under TURA, or the interpretation or application of the article exemption.
2. See 310 CMR 50.00 for the definitions of the terms "manufacture," "process," and "otherwise use."
3. Consistent with EPA, if any amount (calculated separately for each metal) is less than or equal to 0.5 pounds, the amount may be rounded to zero. Also consistent with EPA policy, "(i)f the owner/operator has instituted a comprehensive and aggressive program for the recycle/recovery of all released material then small amounts of toxic chemical that are not, in fact, recycled/recovered due to the imperfect efficiency of virtually any recycling/recovery system should not count towards the 0.5 pound cut-off value." See EPA memorandum entitled **Clarification of Article Exemption**, dated June 14, 1991, from Sam Sasnett to Robert W. Hicklin.
4. See EPA memorandum entitled **Clarification of Article Exemption**, dated June 14, 1991, from Sam Sasnett to Robert W. Hicklin. In effect, this memorandum defines a "comprehensive and aggressive" recycling program as one in which the facility takes all practicable steps to collect and recycle scrap. For example, a small amount of metal that may cling to worker's clothing would not negate an otherwise comprehensive and aggressive recycling program. Sweeping up metal dust and discarding it in a dumpster could negate the comprehensiveness and aggressiveness of the program.
5. DEP recognizes that metalworking operations typically choose their scrap metal dealers based on the best available price. Changes in scrap metal dealers based on pricing decisions would not be considered a change that would normally require notice to the Department.
6. The TURA regulations (310 CMR 50.10) define "article" as follows:

"a manufactured item, other than an item which is manufactured at the facility: (1) which is formed to a specific shape or design during manufacture; (2) which has end use functions dependent in whole or in part upon its shape or design during end use; and (3) which does not release a toxic substance under normal conditions of processing or use of that item at the facility or establishments."



**THE MASSACHUSETTS
TOXICS USE REDUCTION INSTITUTE**

**Categorization of the Toxics Use Reduction
List of Toxic and Hazardous Substances**

Methods and Policy Report No. 18

1999

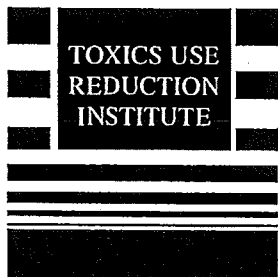
University of Massachusetts Lowell

Categorization of the Toxics Use Reduction List of Toxic and Hazardous Substances

**Report on the work of the
Toxics Use Reduction Science Advisory Board**

**The Toxics Use Reduction Institute
University of Massachusetts Lowell**

March 1999



All rights to this report belong to the Toxics Use Reduction Institute. The material may be duplicated with permission by contacting the Institute.

The Toxics Use Reduction Institute is a multi-disciplinary research, education, and policy center established by the Massachusetts Toxics Use Reduction Act of 1989. The Institute sponsors and conducts research, organizes education and training programs, and provides technical support to promote the reduction in the use of toxic chemicals or the generation of toxic chemical byproducts in industry and commerce. Further information can be obtained by writing the Toxics Use Reduction Institute, University of Massachusetts Lowell, One University Avenue, Lowell, Massachusetts 01854.

©Toxics Use Reduction Institute, University of Massachusetts Lowell



Dr. Michael Ellenbecker
Acting Director
Toxics Use Reduction Institute
One University Avenue
Lowell, MA 01854-2866

Dear Dr. Ellenbecker,

Attached is a report by the Toxics Use Reduction Science Advisory Board on its "Categorization of the Toxics Use Reduction List of Toxic and Hazardous Substances" project. The Board has been working on this project for the past 18 months and is very pleased to submit this work product. It represents a concerted effort on the part of the Board to categorize 258 chemicals into three categories, high hazard, low hazard and uncategorized chemicals.

Many Board members contributed their time and expertise to this project. Those Board members are: James J. Ahearn Jr., Ph.D. from Polaroid Corporation, Andrew F. Beliveau of the U. S. Environmental Protection Agency, Richard Clapp, Sc.D. of B.U. School of Public Health, George M. Gray, Ph.D. of the Harvard School of Public Health, Center for Risk Analysis, Thomas Trayers from the Division of Occupational Safety's Occupational Hygiene Program, and Lawrence H. Boise from the Gloucester Co., Inc.; and two former Board members, Halina Brown, Ph.D. from Clark University and Christine Oliver, M. D. from Mass. General Hospital.

The Board realizes that this work will never be complete as new data on existing chemicals are generated and as new chemicals are reported in the Commonwealth. Adjustments to the list will be made based on new information in these areas. We trust that the list will aid the decisions made concerning TURA Program priorities. In addition, the Board respectfully requests to be informed of any policy decisions resulting from the use of these lists. Thank you.

Sincerely,

David T. Williams
Executive Director
Quincy College
Center for Technology & Health
and Chair, Toxic Use Reduction SAB

Summary

For the past eighteen months, the Toxics Use Reduction Science Advisory Board has been working on a project to categorize the 258 chemicals which have ever been reported under the Massachusetts Toxics Use Reduction Act (TURA). The resulting lists of more hazardous¹, less hazardous and uncategorized chemicals will be used by the Toxics Use Reduction Program to aid in setting priorities and will serve as guidance for companies making chemical substitution decisions. The lists of more hazardous (Category 1) and less hazardous (Category 2) substances follow. The specific chemicals in the categories may change based on new data becoming available or new chemicals being used above TUR reportable threshold quantities in the Commonwealth.

Table 1: Category 1 Chemicals²

Acrylamide	Diethylsulfate	Nickel compounds
Acrylonitrile	Dimethylformamide	Nitrobenzene
Arsenic compounds	Dioxane	Phosgene
Arsenic	Epichlorohydrin	Propyleneimine
Cadmium compounds	Ethylene oxide	Propyleneoxide
Cadmium	Formaldehyde	Selenium and selenium compounds
Carbon tetrachloride	Hydrazine	Silver chromate
Chlorine	Hydrogen cyanide	Sulfuric acid
Chloroform	Hydrogen fluoride	Sulfuric acid (fuming)
Chromic acid	Lead	Tetrachloroethylene
Chromium compounds (+6)	Lead compounds	Toluenediisocyanate
Cyanide compounds	Methylene bisphenyl isocyanate	Trichloroethylene
Dibromochloropropane		
Dichloroethane		

¹ For this work, "hazard" includes inherent toxicity, potential for exposure through dispersal in the workplace (based on the physico-chemical properties of the chemicals, e.g., vapor pressure) and indicators of safety of use (e.g., flammability). Potential for exposure and indicators of safety do not include site-specific conditions.

² Chemical names with CAS numbers can be found in Table 4 of this report.

Table 2: Category 2 Chemicals³

Acetic acid	Ferrous chloride
Acetone	Ferrous sulfate
Ammonium bicarbonate	Isobutyl alcohol
n-Butyl alcohol	Methylethylketone
sec-Butyl alcohol	Methanol
Chromium compounds (+3)	Silver in alloy form
Ethyl acetate	Sodium phosphate, dibasic
Ethylene glycol	Sodium phosphate, tribasic
Ferric chloride	Zinc in alloy form
Ferric sulfate	Zinc borate
Ferrous ammonium sulfate	Zinc sulfate

Introduction

As required under the Toxics Use Reduction Act (M.G.L. c.21I) the Toxic Use Reduction Science Advisory Board serves in an advisory capacity to the Toxics Use Reduction Institute (the Institute) in the following three areas, 1) adding chemicals to or deleting chemicals from the reporting list, 2) establishing priority user segments, and 3) general advice to the Institute on other related matters. In December 1994, the Institute organized the first meeting of the TUR Science Advisory Board. The full Board is composed of eleven members with expertise in the areas of toxicology, epidemiology, medicine, worker issues, industry issues, environmental chemistry and risk assessment. A list of the members who worked on the Chemical Categorization Project is included in Appendix A.

For the past three years, the Toxics Use Reduction Science Advisory Board has assisted the Institute in preparing recommendations for the Administrative Council for delisting chemicals from the TURA Toxic and Hazardous Substance List⁴. Fourteen industry petitions requesting delisting were submitted. The Board recommended delisting in ten cases. Appendix B provides a summary of the recommendations. Throughout this petitioning process the Board has struggled with decisions which seemed to require, at least implicitly, a ranking of the relative hazards of chemicals. Delisting (or refusal to delist) particular chemicals was seen as having the potential to effect the use of one material in preference to another. Therefore, the Board has spent the last eighteen months discussing the categorization of chemicals on the list into one of the following three groups:

³Chemical names with CAS numbers can be found in Table 5 of this report.

⁴Massachusetts Department of Environmental Protection, Bureau of Waste Prevention, Toxics Use Reduction 1995 Reporting Package.

- ◆ Category 1 - more hazardous chemicals
- ◆ Category 2 - less hazardous chemicals
- ◆ Category 3 - uncategorized chemicals - which includes chemicals not reported under TURA since 1990 and chemicals reported under TURA but not categorized as more or less hazardous due to insufficient information or because the chemical was deemed to be of medium hazard.

The resulting categorized list is intended to provide guidance to companies and technical assistance providers making chemical substitution decisions, to aid in targeting technical assistance and research efforts and, ultimately, to aid in reducing overall risk to workers and the environment. It is also intended to provide information to the Institute and the other entities created under TURA, for their use in guiding the implementation of the TURA program. Categorization will not address the issue of varying risk associated with the same chemical used in different processes; this issue has been discussed frequently by the Board during the petition review processes.

Approach

To begin the Categorization project, the Board reviewed many existing models for chemical prioritization which are briefly described in Appendix C. All models, with the exception of the Swedish National Chemicals Inspectorate's system, rely entirely on a scoring system based on health and environmental data. Only one model used by the Indiana Clean Manufacturing Technology and Safe Materials Institute considers occupational safety issues which are of particular concern to the Board. In the initial stages the Board assumed that they, like the other groups, would create a model based on an algorithm using environmental, health and safety data. The Board was concerned, however, that the necessary data might not be available to accurately assess chemical hazard.

Using the criteria from existing models as a starting point, the Board chose their own set of criteria. In choosing criteria for categorizing the list, the following three items were discussed:

- ◆ the data should be generally available
- ◆ the data should be reliable
- ◆ the scheme should be defensible and understandable

Data points were discussed in the following four major areas:

- ◆ human health
- ◆ environmental
- ◆ safety
- ◆ persistence/bioaccumulation

After lengthy discussions, the Board choose the following eight criteria:

- ◆ Carcinogenicity (IARC Classification)
- ◆ Oral LD₅₀
- ◆ Reference dose (RfD)
- ◆ Threshold limit value (TLV) / time weighted average (TWA)
- ◆ Aquatic LC₅₀
- ◆ Flash point (FP)
- ◆ pH (used pKa and pKb)
- ◆ Bioconcentration factor (BCF)

These criteria are defined in Appendix D. The Board requested that the data for each chemical be provided to them for further discussion. In order to make the task less daunting, the Board decided to categorize only the 258 chemicals that had ever been reported under the Toxics Use Reduction Act⁵.

It was necessary to choose surrogate compounds for chemicals listed as groups (e.g., lead compounds). Using the surrogate choices from other chemical ranking schemes as a guide, the criteria used for this selection were as follows: most toxic member of a group, most data available, most widely used. A list of the chemical group name, the surrogate used and an explanation of the choice can be found in Appendix E. In addition, the listings for individual metals and metal compounds were defined based on similar toxicity. These definitions can be found in Appendix F.

The Institute contracted with the Tellus Institute to collect the available data. The data for each chemical, which was provided to each Board member on computer disk, is in Appendix G along with data sources and General Comments authored by the Tellus Institute concerning the collection of data. Table 3 shows the availability of data for the 258 chemicals.

Other models for chemical prioritization reviewed and considered by the Board, rely completely on algorithms which assign either a value of zero to a missing datum point, or use quantitative or qualitative structure-activity relationships⁶ to derive an estimate of the value. The Board rejected these ideas due to the lack of available data for many compounds and the crude assumptions used in algorithms to complete data sets. Instead of developing an algorithm that might be difficult to understand or could ignore known risks, the Board chose to use an expert judgment method

⁵The list of substances reportable under TURA contains the approximately 1500 substances reportable under the federal laws, EPCRA and CERCLA, with the exception of a few federally listed substances that have been delisted by the TURA Administrative Council. Only those chemicals which a TURA filer uses or processes in quantities of 25,000 pounds or more per year, or otherwise uses in the amount of 10,000 pounds or more per year at any one facility are reportable.

⁶Quantitative Structure Activity Relationship software is available (e.g., Ecosar and MicroQSAR can be obtained from the U.S. EPA).

(based on the principles of the Delphi Method). This approach was used by Polaroid in developing their chemical ranking system⁷, and it allows for incorporation of the Board members' professional experiences which is especially important for chemicals that have little or no data available. The Board members supported the expert judgment method and found it to be more satisfactory than the algorithm method

Criterion	Percent data available
IARC Classification	40%
LD ₅₀	55%
RfD	38%
TLV (TWA)	70%
TLV (STEL)	19%
LC ₅₀	41%
FP	41%
pKa	8%
pKb	6%
BCF	54%

The Delphi Method and the Expert Judgement Method

The term Delphi Method came from a study concerning the use of expert opinion called Project Delphi performed by the Rand Corporation in the 1950s for the U. S. Air Force. This study aimed to "obtain the most reliable consensus of opinion of a group of experts."⁸ The Delphi method is appropriate when "accurate information is unavailable or expensive to obtain or evaluation models require subjective inputs to the point where they become the dominating parameters."⁹ The rationale behind the method is that "if the opinion of one expert on an uncertain point is useful, the opinion of many experts - when boiled down to a single group opinion - should be even better."¹⁰

⁷Ahearn, J., Fatkin, H., and Schwalm, W., "Polaroid Corporation's Systematic Approach to Waste Minimization," Pollution Prevention Review, Summer 1991, pp. 257-271.

⁸Linstone, H.A., and Turoff, M., "The Delphi Method: Techniques and Applications," Addison-Wesley, Reading, Mass., 1975, pp. 3-12.

⁹Ibid.

¹⁰Gautschi, T.F., "Delphi Method Predicts the Future," Design News, Feb. 1990, p. 414.

The original method uses a series of questionnaires to solicit the opinions of the experts. The results of the questionnaires are summarized by an investigator who provides feedback to the experts. A modified questionnaire is then used to obtain a second round of opinions and the process continues until consensus is reached.

The Science Advisory Board's Expert Judgement Method began with each expert choosing fifty "more hazardous chemicals" and fifty "less hazardous chemicals", subsequently named Category 1 and Category 2 respectively. Each member used their own ranking scheme based on the data, their area of expertise and personal experiences. The votes from each expert were tabulated and the chemicals were ranked by the number of expert votes received for the category.

When asked to describe the criteria used to categorize the chemicals, the following statements were made by Board members for the more hazardous list of chemicals: "data revealed at least two criteria of concern and toxicity was rated higher than flammability", "aquatic toxicity ranked highest", "focused on carcinogenicity", "looked at potential for exposure to workers", "ratio of TLV/LD₅₀". These comments illustrate the diversity of expert opinion that contributed to the creation of these categories. Commonly, the criteria used for the less hazardous list were simply opposite of the more hazardous list or "didn't raise any concerns".

Refinement

Following the initial vote, two lists were prepared of chemicals that received a number of votes for each Category. The number cutoff was determined in order to produce lists of 25-30 chemicals each for further discussion. This ended up being 4 votes for Category 2 and 5 votes for Category 1 as there was considerable consensus for many of the chemicals on the Category 1 list. Each list was then discussed chemical by chemical. In some cases, additional data were requested. In some cases, chemicals receiving one vote less than the cutoff were discussed. For the more hazardous chemical list, the Board decided to discuss every chemical that had an IARC classification of 1, 2a or 2b. As each chemical was discussed, consensus decisions were made to put the chemical in Category 1, 2 or 3.

For chemicals that received more than one vote for each list, the Board reviewed the data that were available and discussed the chemicals at length. In all cases the discrepancy was due to either conflicting data (e.g., low TLV and high LC₅₀), the lack of data or, in the case of metals, different definitions being used by members. This exercise resulted in a complete review of all metals and metal categories to be certain that all Board members were making the same assumptions. (See Appendix F, mentioned previously.)

The Board also compared its list to other lists of hazardous chemicals such as EPA's list of Extremely Hazardous Substances, the list created by EPA's Waste Minimization Prioritization Tool, and the Swedish National Chemicals Inspectorate list of Chemical Substances Which Require Particular Attention. In each case, the Board discussed similarities and discrepancies, and concluded that their process and resulting categories were more appropriate for the purposes of the project.

The Resulting Categories

Following are the Category 1 and 2 chemicals with CAS numbers as defined by the TUR Science Advisory Board. For chemicals in Category 1, along with the chemical name are a few phrases summarizing the discussion that resulted in the chemical's placement in this category. The list of Category 3 chemicals can be found in Appendix H. It is important to note that these three categories represent only the 258 chemicals that have been reported under TURA at the time of this project. For a complete list of the approximately 1200 chemicals on the TURA List of Toxic and Hazardous Substances, please refer to the Massachusetts Department of Environmental Protection, Bureau of Waste Prevention, Toxics Use Reduction Reporting Package.

Table 4: Category 1 Chemicals with CAS Numbers

-CAS Number(s)	Chemical Name	Summary
79-06-1	Acrylamide	IARC 2a, potential worker exposure problem
107-13-1	Acrylonitrile	IARC 2a, evidence of human carcinogenicity
01-00-1, 7440-38-2	Arsenic and arsenic compounds	IARC 1, acutely toxic
01-00-4, 7440-43-9	Cadmium and cadmium compounds	IARC 1
56-23-5	Carbon tetrachloride	Montreal Protocol chemical, liver toxin, suspect human carcinogen, IARC 2b
7782-50-5	Chlorine	low RfD, gas, toxic, corrosive to skin, heavier than air, stable in air, used in large quantities, toxic to aquatic organisms
67-66-3	Chloroform	low RfD, acute effects to the liver, medium bioaccumulation factor, IARC 2b
7738-94-5, 11115-74-5	Chromic acid	hexavalent chromium
01-01-2, 7440-47-3	Chromium compounds (+6 valence)	IARC 1, confirmed carcinogens
01-01-6, 143-33-9	Cyanide compounds and sodium cyanide	acutely toxic
96-12-8	Dibromodichloropropane (DBCP)	banned as a fumigant in 1977, PEL 1 ppb, IARC 2b
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	acute toxicity, IARC 2b
64-67-5	Diethyl sulfate	IARC 2a, incompatible with water, highly irritating, reactive alkylating agent
68-12-2	Dimethylformamide	limited evidence of testicular cancer in humans, inadequate in animals, very soluble in water, PEL 10 ppm, easily absorbed into skin, exposures are likely to be high because of its large use, occupational hazard, highly mobile in soil
123-91-1	1,4-Dioxane	acute effects, strong skin absorber, IARC 2b

Table 4: Category 1 Chemicals with CAS Numbers

-CAS Number(s)	Chemical Name	Summary
106-89-8	Epichlorohydrin	IARC 2a, reportable quantity 10 pounds
75-21-8	Ethylene oxide	IARC 2a, mutagenic, reactive, eye and skin irritant, carcinogenic, and highly flammable
50-00-0	Formaldehyde	reactive, irritating, IARC 2a, acutely toxic
302-01-2	Hydrazine	eye and skin irritant, flammable, IARC 2b, TLV 10 ppb
01-02-6, 7439-92-1, 10099-74-8	Lead and lead compounds	neuro-toxic and impairs reproduction, IARC 2b
101-68-8	Methylenebis(phenylisocyanate)	
01-02-9	Nickel compounds	IARC 1 classification for nickel and nickel compounds (1990)
98-95-3	Nitrobenzene	carcinogen, causes liver damage, eye and skin irritant, smells foul, very low RFD and TLV=1 ppm
75-44-5	Phosgene	Leukocyte, severe eye, skin, mucous membrane irritant, TLV=0.1 ppm
75-55-8	Propyleneimine	very reactive, PEL=2ppm, skin absorbing, sufficient carcinogenic evidence in humans, IARC 2b
75-56-9	Propyleneoxide	TLV 20 ppm, evidence of mutagenicity, carcinogenicity, acute hazard
01-03-6, 7782-49-2	Selenium and selenium compounds	
7664-93-9, 8014-95-7	Sulfuric acid and fuming sulfuric acid	IARC 1, fuming is the actual toxic factor (due to its vapor pressure), corrosive, carcinogenic, reactive, causes lung damage
127-18-4	Tetrachloroethylene	IARC 2b, suspected carcinogen
584-84-9, 91-08-7, 26471-62-5	Toluenediisocyanate (2,4 and 2,6 and mixed isomers)	irritating to eyes, nose, skin and TLV 5 ppb, IARC 2b
79-01-6	Trichloroethylene	causes eye, skin, liver and central nervous system damage and low TLV

Table 5: Category 2 Chemicals with CAS Numbers	
64-19-7	Acetic Acid
67-64-1	Acetone
1066-33-7	Ammonium bicarbonate
71-36-3	n-Butyl Alcohol
78-92-2	sec-Butyl Alcohol
---	Chromium ³⁺ compounds
141-78-6	Ethyl Acetate
107-21-1	Ethylene Glycol
7705-08-0	Ferric chloride
10028-22-5	Ferric Sulfate
10045-89-3	Ferrous Ammonium Sulfate
7758-94-3	Ferrous Chloride
7720-78-7, 7782-63-0	Ferrous Sulfate
78-83-1	Isobutyl Alcohol
78-93-3	Methylethylketone
67-56-1	Methanol
7558-79-4, 10039-32-4, 10140-65-5	Sodium Phosphate, dibasic
7601-54-9, 7758-29-4, 7785-84-4, 10101-89-0, 10124-56-8, 10361-89-4	Sodium Phosphate, tribasic
1332-07-6	Zinc Borate
7733-02-0	Zinc Sulfate

Maintenance and Further Work

The Board realizes that the chemicals in the specific categories may change based on new data becoming available or new chemicals being used above TUR reportable threshold quantities in the Commonwealth. The Board will establish a review process whereby the Category 1 and Category 2 lists will be reviewed annually and new chemicals reported in Massachusetts will be evaluated. This review process will begin at the Board meeting following the release of Toxics Use Reduction data by the Department of Environmental Protection.

Appendix A: List of Members

David T. Williams
Director, Center for Technology and Health
Quincy College

James J. Ahearn Jr., Ph.D.
Polaroid Corporation

Andrew F. Beliveau
Environmental Protection Agency

Richard Clapp, Sc.D.
Boston University School of Public Health

George M. Gray, Ph.D.
Harvard School of Public Health
Center for Risk Analysis

Thomas Trayers
Division of Occupational Safety
Occupational Hygiene Program

Lawrence H. Boise
Gloucester Co., Inc.

Halina Brown, Ph. D. (ex officio)
Clark University

Christine Oliver, M. D. (ex officio)
Public Health Resource Group
Mass. General Hospital

Appendix B: Summary of Toxics Use Reduction Science Advisory Board Recommendations

Chemical Name	Recommendation	Supplemental Information	Status or Outcome
Nickel in alloy form	delist except for aerosols (less than 50 um)	Unanimous vote to accept recommendation. Aerosols should be reported under TURA because planning for efficient use is beneficial.	Delisting petition request accepted by Admin Council per SAB recommendation.
Chromium in alloy form	delist except for aerosols (less than 50 um)	Unanimous vote to accept recommendation. Aerosols should be reported under TURA because planning for efficient use is beneficial.	Delisting petition request accepted by Admin Council per SAB recommendation.
Copper in alloy form	delist except for aerosols (less than 50 um)	Unanimous vote to accept recommendation. Aerosols should be reported under TURA because planning for efficient use is beneficial.	Delisting petition request accepted by Admin Council per SAB recommendation.
Manganese in alloy form	delist except for aerosols (less than 50 um)	Unanimous vote to accept recommendation. Aerosols should be reported under TURA because planning for efficient use is beneficial.	Delisting petition request accepted by Admin Council per SAB recommendation.
Cobalt in alloy form	delist except for aerosols (less than 50 um)	Unanimous vote to accept recommendation. Aerosols should be reported under TURA because planning for efficient use is beneficial.	Delisting petition request accepted by Admin Council per SAB recommendation.
Chromium (III) oxide	delist	Unanimous vote to accept recommendation. Chromium (III) oxide is not known to cause significant human health effects, is not known to cause significant adverse effects on the env., does not bioaccumulate and the oxidation of chromium (III) to chromium (VI) is not likely to occur.	Delisting petition request accepted by Admin Council per SAB recommendation.
Sodium hydroxide	not delist	Majority decision to accept recommendation. Decision based primarily on its potential for acute toxicity to workers. For specific applications, there may be uses of sodium hydroxide for which there is scientific justification to determine that sodium hydroxide is the least hazardous material and presents the least risk; this should be considered by the Administrative Council	Delisting petition request denied by Admin Council per SAB recommendation.
Hydroquinone	delist, except for manufacture	Unanimous vote to accept recommendation. Material has moderate to low toxicity. Recommendation to delist was made because material did not satisfy the criteria of "significant health effects"	Delisting petition request accepted by Admin Council per SAB recommendation.

Chemical Name	Recommendation	Supplemental Information	Status or Outcome
Butyl benzyl phthalate	delist	Unanimous vote to accept recommendation. The Board recommended delisting in the absence of science to prove that butyl benzyl phthalate is estrogenic despite emerging science that suggests that this potential exists.	From a policy perspective, the Institute questioned whether the absence of knowledge is a sufficient basis to support a delisting at this time. The Admin Council denied the delisting petition.
Ethyl Acetate	not delist	Unanimous vote to accept recommendation. Recommendation based primarily on its potential for acute toxicity to workers.	Delisting petition request denied by Admin Council per SAB recommendation.
Acetic Acid	delist at conc. below 12%	Unanimous vote to accept recommendation.	Delisting petition request accepted by Admin Council per SAB recommendation.
Sodium Hypochlorite	not delist	Majority decision to accept recommendation.	Delisting petition request denied by Admin Council per SAB recommendation.
Acetone	no recommendation	Board vote was split.	Delisting request denied. Acetone will be reviewed again in one year and categorization of the list of chemicals will be evaluated.
Zinc oxide	delist	Unanimous vote to accept recommendation.	Delisting petition request accepted by Admin Council per SAB recommendation.

Appendix C: Bibliography of Categorization/Prioritization Schemes

Davis, Gary et al., Center for Clean Products and Clean Technologies, University of Tennessee, "Chemical Hazard Evaluation for Management Strategies: A Method for Ranking and Scoring Chemicals by Potential Human Health and Environmental Impacts", EPA Document EPA/600/R-94/177, June 1994. *This model uses risk-based chemical ranking and scoring combining the toxic effects of chemicals and the potential for exposure to those chemicals. The report ranks 140 TRI chemicals based on 99% of total releases. The method does not include secondary global impacts such as ozone depleting and global warming, nor does it include worker safety. Potential uses of the methodology are: priority setting for regulatory action, for business decisions and to set priorities for pollution prevention.*

Davis, Gary et al., Center for Clean Products and Clean Technologies, University of Tennessee, "Comparative Evaluation of Chemical Ranking and Scoring Methodologies", April 7, 1994.

Gray, George and Jennifer Hartwell, Harvard Center for Risk Analysis, Harvard School of Public Health, "The Role of Risk in Chemical Substitution Decisions," prepared for the Massachusetts Toxics Use Reduction Institute, July 1994. *Outlines a risk-based substitution decision-making framework, the chemical substitution tree (CST). Suggests looking at both the application exposure and the disposal exposure for potential effects on the environment, workers and the public. Gives some ideas of chemical characteristics to consider and where to find relevant information. The model seeks to identify areas of potentially high risk so that companies can make informed decisions on how to reduce the risk.*

Grimsted, Bradley, et al., "A Multimedia Assessment Scheme to Evaluate Chemical Effects on the Environment and Human Health" *Pollution Prevention Review*, Summer 1994, pp. 259-268. *This article presents a model for calculating a common unit of measure - the Pollution Unit - that allows comparisons of potential relative effects of chemicals on different environmental media. The scheme incorporates environmental and human health factors (using ambient standards and regulatory criteria) but can be adjusted to stress one over the other or may be developed to incorporate occupational standards if worker health is of primary concern. Authors boast "easy to use", "technically defensible" and "versatile" as words to describe the model.*

Indiana Clean Manufacturing Technology and Sage Materials Institute, "Pollution Prevention Progress Measurement Method (3P2M)", Purdue University, February 1998. *This work builds on the Center for Clean Products and Clean Technologies algorithm to include factors for worker exposure and atmospheric hazards. This model does not include releases to the environment as did the Clean Products work. It has an option for inputting number of pounds of a chemical used in the workplace. The worker exposure component has three parts: health effects (chronic and acute), routes of exposure (vapor pressure, oral, skin, dust/mist) and safety (flammability, reactivity, corrosivity). For carcinogenicity, the most protective rating of EPA, ACGIH and IARC was used. The acute hazard value is based on the short term exposure limit (STEL); if an STEL does not exist, the score is 0. For oral exposure, the only compounds with scores other than zero are lead compounds.*

Massachusetts Toxics Use Reduction Institute, "Blanket Wash Technology Study: An Evaluation of Commercially Available Blanket Washes." Technical Report No. 16, 1994. *This study gives comparative information on the performance, environmental, health and safety characteristics of blanket washes commonly used in sheetfed offset lithography. Each attribute was given a good, fair or poor score. The non-performance attributes scored included VOC content, flash point, health hazard and potential regulatory impact. For determining a score for the health hazard, mixtures were given the highest score of any ingredient and data were obtained from REPROTEXT. For determining the potential regulatory impact, chemicals were given scores based on how many times they appeared on nineteen regulated chemical lists.*

Swedish National Chemicals Inspectorate, "Observation List of Chemical Substances Which Require Particular Attention," Printgraf AB, Stockholm, Sweden, January 1997. *This work was done to guide users of chemicals to pay particular attention to the use of chemicals on the Observation List which contains 199 chemicals. A substance was placed on the list if it met any of an established list of criteria indicating environmental or health hazards. These criteria include bioaccumulation, aquatic toxicity, ozone depletion, acute toxicity, sensitizer, chronic toxicity, neurotoxicity, reproductive toxicity and carcinogenicity.*

Swedish National Chemicals Inspectorate, "Selecting Multiproblem Chemicals for Risk Reduction." *This work began with 7000 chemicals which was a combination of 70 national and international lists of chemicals hazardous to human health or the environment. In Step I, the list was narrowed to 500 chemicals that appeared on several lists. In Step II, the list was narrowed to 100 chemicals using 18 criteria of equal weight in the categories of environmental properties, health properties, and exposure potential. If no data was available, the criteria was not used. From this list of 100 chemicals, 45 were chosen based on additional data and use patterns in Sweden. Finally, 27 chemicals were chosen as candidates for risk reduction by a panel of experts who used the available data and member's experience and knowledge.*

Tiley, Jaimie, "Solvent Substitution Methodology using Multiattribute Utility Theory and the Analytical Hierarchical Process", Department of the Air Force, Air Force Institute of Technology, Wright-Patterson Air Force Base, OH. *This thesis presents a multicriteria decision making methodology for ranking alternatives to solvent cleaning. It compares Multiattribute Utility Theory and the Analytical Hierarchical Process. The cleaning situation studied is general cleaning of aircraft engine components. There were problems associated with both decision models including independence constraints and scaling issues. The author used group decision making scoring (1-7) in four areas: environmental impact, health/safety, process compatibility, cleaning effectiveness. Important attributes within each category were chosen by survey. Interesting to note which attributes were chosen in the environmental impact and health/safety categories (p 46.)*

US Environmental Protection Agency, "Waste Minimization Prioritization Tool," EPA 530-R-97-019, June 1997. *This work began with the adoption and modification of earlier work on the Use Cluster Scoring System. The Tool uses persistence, bioaccumulation and toxicity (human cancer, human non-cancer and ecological) characteristics for chemical risk screening. The mass of a chemical can be input into the tool's software. 900 chemicals were scored due to the*

availability of data. Partial chemical data is available for an additional 3800 chemicals which were not scored. If data did not exist, the chemical is not scored. The tool ignores acute effects, including those to workers.

Wolf, Katy, "The Generic Classification System: A Simplified Approach to Selecting Alternatives to Chlorinated Solvents" Pollution Prevention Review, Winter 1993-94, p 15-29. The author sets up a generic classification system for choosing alternative to a chlorinated solvents. The properties/classifications of PEL, VOC, HAP, flash point, evaporation rate, solvent strength, ozone depleting potential, global warming potential and toxicity are covered. Good reference for data on the available solvent alternatives. Methodology is practical but very specific to solvents alternatives.

Working Group of Accelerated Reduction/Elimination of Toxics (ARET), "Environmental Leaders - Voluntary Commitments to Action on Toxics through ARET," Ontario, March 1995. This work began with 2000 substances from the Chemical Evaluation Search and Retrieval System. Approximately 500 of these substance had sufficient information to screen them for the ARET list. The criteria were chosen in the areas of toxicity, persistence and bioaccumulation. The toxicity criteria were in the following seven groups: acute lethality, chronic toxicity non-mammals, chronic toxicity plants, chronic toxicity mammals, teratogenicity, carcinogenicity, genotoxicity.

Appendix D: Criterion Definitions

Oral LD₅₀: A single calculated dose of a substance administered through food or gavage (tube feeding) in mg per kg of body weight, which kills 50% of a group of test animals within 14 days. A lower LD₅₀ indicates a more toxic substance.

Reference Dose (RfD): An estimate of the daily exposure level for the human population that is likely to be without an appreciable risk of adverse effects over a lifetime. RfDs are often estimated from the highest dose at which no adverse effects are observed in animals, the No Observed Adverse Effects Level (NOAEL). The Environmental Protection Agency has defined RfD's for a number of chemicals.

Carcinogen: International Agency for Research on Cancer (IARC) uses the term "carcinogen to denote an agent that is capable of increasing the incidence of malignant neoplasms; the induction of benign neoplasms may in some circumstances contribute to the judgement that an agent is carcinogenic..."

IARC Classification. Carcinogens are rated in 1 of 5 groups: (1) Group 1 - the agent is carcinogenic to humans; (2) Group 2A - the agent is probably carcinogenic to humans; (3) Group 2B - the agent is possible carcinogenic to humans; (4) Group 3 - the agent is not classifiable as to its carcinogenicity to humans (when agents cannot be placed in any other group); and (5) Group 4 - the agent is probably not carcinogenic to humans.

TLV (Threshold Limit Value): Published by the American Conference of Governmental Industrial Hygienists (ACGIH), defined as airborne concentrations under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse effects. TLV's are generally established on a consensus basis; as such, some workers may be affected at or below these limits due to unusual susceptibility or pre-existing conditions. A lower TLV indicates a more toxic substance.

Aquatic LC₅₀: The concentration of a chemical, in water, that causes death in 50% of the fish tested. Aquatic LC₅₀ can be calculated for both freshwater and saltwater fish (and sometimes for other aquatic organisms).

Bioconcentration: Describes the tendency for a chemical to accumulate in biological systems, and more specifically the ability of a substance to accumulate in the tissues of organisms. Bioconcentration is a function of the physicochemical properties of a chemical, especially the chemical's lipid solubility (solubility in fat). Two parameters most frequently used to express bioconcentration are the octanol-water partition coefficient (K_{ow}) and the Bioconcentration factor (BCF).

Bioconcentration factor is the ratio of the concentration of a chemical in an organism to its concentration in the test medium or environment, typically water, at steady-state conditions. This factor is a measure of the chemical's ability to bioaccumulate

K_{ow} is defined as the ratio of a chemical's concentration in the octanol phase to its concentration in the aqueous phase of a two-phase 1-octanol/water system at equilibrium. In other words, it represents the distribution tendency of organic chemicals between organic and aqueous phases. As lipid soluble chemicals are generally also soluble in solvents such as octanol and are relatively insoluble in water, K_{ow} can be used to predict the bioconcentration factor. A low $\log K_{ow}$ value is considered hydrophilic and has a low fat solubility and high water solubility. K_{ow} is generally expressed in log units.

Flash point: The temperature at which material gives off sufficient vapor to form an ignitable mixture with the air near the surface of the material. The lower the flash point, the more probability an explosion could occur under normal working conditions.

pH: A logarithmic index for the hydrogen ion concentration in an aqueous solution. A pH below 7 indicates acidity, and one above 7 alkalinity (at 25C). The pH scale ranges from 0-14, with extreme values representing a more corrosive aqueous solution. Values closest to 7 represent the lowest hazard.

Appendix E: Surrogate Chemicals

Mass. #	CAS #	Chemical Group Name	Suggested Surrogate	Notes
01-00-0	1309-64-4	Antimony compounds	Diantimony trioxide	Tennessee surrogate
01-00-1	1303-28-2	Arsenic compounds	Arsenic pentoxide	Tennessee surrogate
01-00-2	10361-37-2	Barium compounds	Barium chloride	Tennessee surrogate
01-00-4	10108-64-2	Cadmium compounds	Cadmium chloride	Tennessee surrogate
01-01-2	1333-82-0	Chromium Compounds	Chromium oxide	Tennessee surrogate
01-01-3	7646-79-9	Cobalt compounds	Cobalt chloride	Tennessee surrogate
01-01-5	7758-98-7	Copper compounds	Copper sulfate	Tennessee surrogate
01-01-6	143-33-9	Cyanide compounds	Sodium cyanide	Most widely used, most toxic, most data available
01-02-2	110-80-5	Glycol ethers	Glycolmonoethylether	Most common, most data available
01-02-6	7758-95-4	Lead compounds	Lead chloride	Tennessee surrogate
01-02-7	1344-43-0	Manganese compounds	Manganese oxide	Tennessee surrogate
01-02-9	37211-05-5 373-02-4 6018-89-9	Nickel and compounds	Nickel chloride Nickel acetate Nickel acetate tetrahydrate	Tennessee surrogate for all except mammalian oral toxicity For mammalian oral toxicity due to availability of data Choose specific Nickel acetate with the most data
01-03-3	117-81-7	Phthalate esters	Diethylhexylphthalate	Most common, most data available
01-03-6	7446-08-4 7783-00-8 7488-56-4 7783-79-1 12033-59-9 14832-90-7 57-12-5	Selenium and compounds	Selenium IV dioxide Selenium IV disulfide Selenium hexafluoride Selenium nitride Selenium oxide Selenium	Tellus choose chemical in this group that has the most data

Mass. #	CAS #	Chemical Group Name	Suggested Surrogate	Notes
01-03-7	7783-90-6 7761-88-8 7783-91-7 7784-01-2 506-64-9	Silver and compounds	Silver chloride Silver nitrate Silver chlorite Silver chromate Silver cyanide	Tellus choose chemical in this group that has the most data
01-03-9	1314-13-2 7733-02-0	Zinc and compounds	Zinc oxide Zinc sulfate	Tennessee surrogate for all except fish toxicity For fish toxicity b/c Zinc oxide not soluble in water
01-09-0	7761-88-8	Nitrate compounds	Zinc nitrate	Note: water dissociable nitrate compounds reportable only in aqueous solutions on SARA 313. Silver nitrate most soluble.
Notes: For Nickel acetate, Selenium compounds and Silver compounds, choose the specific chemical based on the availability for the most data. Glycomonoethyl and Diethylhexylphthalate are listed separately also.				

Appendix F: Metals

At the November, 1997 meeting of the Science Advisory Board, members proposed groupings for metals and metal compounds to represent similarities in metal toxicities. If the base metal is a category by itself (e.g., copper), that particular category represents the toxicity of the metal itself (e.g., metallic copper). If the base metal is in a category with other metal compounds (e.g., lead and lead compounds), it was the opinion of the group that the metal toxicities of the base metal and the metal compounds were basically similar. For categories that are comprised of more than one compound, the CAS number for the group is given.

Base Metal	Metal Categories		CAS #
Aluminum	1	Aluminum, Aluminum oxide	7429-90-5
	2	Aluminum sulfate	
Antimony	1	Antimony, Antimony cmpds, Antimony trioxide	1309-64-4
Arsenic	1	Arsenic, Arsenic compounds	1303-28-2
Barium	1	Barium	
	2	Barium compounds	
Cadmium	1	Cadmium, Cadmium compounds	10108-64-
Chromium	1	Chromium, Chromium and cmpds [valence 0 and 3]	7440-47-3
	2	Hexavalent chromium [valence 6]	1333-82-0
Cobalt	1	Cobalt	
	2	Cobalt compounds	
Copper	1	Copper	
	2	Copper compounds	
Iron	1	Ferric chloride, Ferric sulfate, Ferrous ammonium sulfate, Ferrous chloride, Ferrous sulfate	7705-08-0

Base Metal	Metal Categories		CAS #
Lead	1	Lead, Lead chromate, Lead compounds, Lead nitrate	7758-97-6
Manganese	1	Manganese, Manganese cmpds, Potassium permanganate	7439-96-5
Nickel	1	Nickel	
	2	Nickel acetate, Nickel acetate tetrahydrate, Nickel and compounds	37211-05-
Potassium	1	Potassium hydroxide	
Selenium	1	Selenium, Selenium & cmpds, Selenium cmpd, Selenium dioxide, Selenium hexaflouride, Selenium nitride, Selenium oxide	7488-56-4
Silver*	1	Silver	
	2	Silver and compounds	
	3	Silver chlorite	
	4	Silver chromate	
	5	Silver cyanide	
	6	Silver nitrate	
*For the Silver compounds, it was noted that the Silver chloride is not very soluble and that the Chromate and Cyanide compounds are more toxic due to the presence of those components, not the silver.			
Sodium	1	Sodium	
	2	Sodium bichromate	
	3	Sodium bisulfite	
	4	Sodium cyanide	
	5	Sodium dimethyldithiocarbamate	
	6	Sodium dodecylbenzenesulfonate	

TUR SAB 12/17/97

Base Metal	Metal Categories		CAS #
	7	Sodium fluoride	
	8	Sodium hydrosulfide	
	9	Sodium hydroxide	
	10	Sodium hypochlorite	
	11	Sodium methylate	
	12	Sodium nitrite	
	13	Sodium phosphate, dibasic	
	14	Sodium phosphate, tribasic	
	15	Sodium phosphate, tribasic dodecahydrate	
	16	Sodium phosphate, tribasic anhydrous	
Zinc	1	Zinc	
	2	Zinc and compounds	
	3	Zinc oxide fume	
	4	Zinc sulfate	
	5	Zinc ammonium chloride	
	6	Zinc borate	
	7	Zinc sulfate	

Appendix G: Data, Collection and Sources

Chemical Data

MASTER DATA FILE

CAS Number	Chemical Name	IARC	RFD	TLV(TWA in mg/m ³)	FP (C)	BCF	pKa	pKa (ca)	pK notes	LD50, pT	c LC50, pT	Aquatic LC50 notes	LD50 notes	TLV Notes
0001717-00-6	1,1-DICHLORO - 1 FLUOROETHANE													
0000872-50-4	1-METHYL-2-PYRROLIDONE					0.0738								
0000540-84-1	2,2,4-TRIMETHYLPENTANE				-7	848.7								
0000612-83-9	3,3'DICHLOROBENZIDINE									-1.07			Rat, TerraTox	
0055406-53-6	3-iodo-2-propynyl													
0000075-07-0	ACETALDEHYDE	2B		no TWA	-40	0.4202				-1.64	0.15	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000064-19-7	ACETIC ACID			25	40	0.1146	4.75			-0.94	-0.12	96hr, FHM, Static, TerraTox	Mouse,	
0000108-24-7	ACETIC ANHYDRIDE			21	54	0.0486				-1.24			Rat, TerraTox	
0000067-64-1	ACETONE		0.1	1188	-17	0.099				-1.71	-2.15	96hr, FHM, Static, TerraTox	Mouse,	
0000075-05-8	ACETONITRILE		0.01	67	5	0.0803				-0.82	-1.61	96hr, FHM, Static, TerraTox	Mouse,	
0000098-86-2	ACETOPHENONE		0.1	49	82	4.9805				-0.79	-0.13	96hr, FHM, Static, TerraTox	Mouse,	
0000079-06-1	ACRYLAMIDE	2A	0	0.03		0.0319				-0.18	-0.19	96hr, FHM, Static, TerraTox	Mouse,	skin
0000079-10-7	ACRYLICACID		0.5	5.9	54					0.33			Rat, TerraTox	skin
0000107-13-1	ACRYLONITRILE	2A	0	4.3	0	0.2764				0.29	0.47	96hr, FHM, Static, TerraTox	Mouse,	skin
0000124-04-9	ADIPIC ACID			5	196	0.1936	4.42							
0000107-05-1	ALLYLCHLORIDE			3	-28	4.6771				-0.74	0.5	96hr, FHM, Static, TerraTox	Mouse,	
0007429-90-5	ALUMINUM			5										
0001344-28-1	ALUMINUMOXIDE			10										multiple TLVs, welding fumes and pyro powders
0010043-01-3	ALUMINUMSULFATE			2						-1.26			Mouse,	aluminum soluble salts
0007664-41-7	AMMONIA			17		0.265		4.75	CRC		0.98	96hr, FHM, Static, TerraTox		
0001066-33-7	AMMONIUMBICARBONATE													
0001341-49-7	AMMONIUMBIFLUORIDE													
0012125-02-9	AMMONIUMCHLORIDE			10										fume
0012125-01-8	AMMONIUMFLUORIDE										-0.99	96hr, FHM, Static, TerraTox		
0001336-21-6	AMMONIUMHYDROXIDE													
0007773-06-0	AMMONIUMSULFAMATE			10						-1.24			Rat, TerraTox	
0000062-53-3	ANILINE			7.6	70	2.5704		4.69		-0.67	0	96hr, FHM, Static, TerraTox	Rat, TerraTox	LV incl. homologues and compounds
0007440-36-0	ANTIMONY		0	0.5										Antimony TLV
0001309-64-4	ANTIMONY COMPOUNDS	2B	0	0.5										Antimony TLV
0001309-64-4	ANTIMONYTRIOXIDE	2B	0	0.5										and inorg. cmpds, not Arsine
0007440-38-2	ARSENIC		0	0.01										Arsenic TLV
0001303-28-2	ARSENIC COMPOUNDS			0.01										and soluble cmpds
0007440-39-3	BARIUM		0.07	0.5										Barium TLV
0010361-37-2	BARIUM COMPOUNDS			0.5										
0000094-36-0	BENZOYLPEROXIDE			5						-1.37			Mouse,	
0000092-52-4	BIPHENYL			1.3		436.52				-1.09	1.9	96hr, FHM, Static, TerraTox	Mouse,	
0000103-23-1	BISETHYLHEXYL		0.6		205	546.36								
0007726-95-6	BROMINE			0.66	none									
0000353-59-3	BROMOCHLORODIFLUOROMETHANE													
0000074-83-9	BROMOMETHANE		0	3.9		1.981				-0.35			Rat, TerraTox	skin
0000110-19-0	BUTYL ACETATE-I			713	21	6.8197								
0000540-88-5	BUTYL ACETATE-T			200	16	7.7332					-0.45	96hr, FHM, Static, TerraTox		
0000123-86-4	BUTYLACETATE			713	22	7.4159				-1.78	0.81	96hr, FHM, Static, TerraTox	Mouse,	
0000141-32-2	BUTYLACRYLATE			52	39	22.986				-0.85			Rat, TerraTox	
0000071-36-3	BUTYLALCOHOLA		0.1	no TWA	35	1.0347				-1.03	-1.37	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000078-92-2	BUTYLALCOHOLB			303	26									
0000075-65-0	BUTYLALCOHOLC			303	4	0.3408				-1.67	-1.94	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000085-68-7	BUTYLBENZYLPHTHALA		0.2		213	776.25				-0.87	2.13	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000084-74-2	BUTYLPHTHALATE		0.1		171	3013.9				-1.28	2.4	96hr, FHM, Static, TerraTox	Mouse,	
0000123-72-8	BUTYRALDEHYDE				-11	1.0347				-1.54	0.65	96hr, FHM, Static, TerraTox	Rat, TerraTox	

Chemical Data

CAS Number	Chemical Name	IARC	RFD	TLV(TWA in mg/m ³)	FP (C)	BCF	pKa	pKa (ca)	pK notes	LD50, pT	c LC50, pT	Aquatic LC50 notes	LD50 notes	TLV Notes
0007440-43-9	CADMIUM	1	0	0.01										and compounds
0010108-64-2	CADMIUM COMPOUNDS	1		0.01						0.49	2.08	96hr, FHM, Static, TerraTox	Mouse,	Cadmium TLV
0000075-20-7	CALCIUM CARBIDE													
0007778-54-3	CALCIUM HYPOCHLORITE													
0000105-60-2	CAPROLACTAM DUST AND VAPOR		0.5	1		0.6525								Dust TLV=1, Vapor TLV=23
0000056-23-5	CARBON TETRACHLORIDE	2B	0	31	none	17.378				-1.06	0.55	96hr, FHM, Static, TerraTox	Rat, TerraTox	skin
0007782-50-5	CHLORINE		0.1	1.5										
0000108-90-7	CHLOROBENZENE		0.02	46	24	446.68				-1.31	0.7	96hr, FHM, Static, TerraTox	Mouse,	
0000075-45-6	CHLORODIFLUOROMETHANE			3540		1.5732								
0000067-66-3	CHLOROFORM	2B	0.01	49	none	6.0256				0.52	0.23	96hr, FHM, Static, TerraTox	Mouse,	
0000074-87-3	CHLOROMETHANE			103	-40	1.1018				-1.55	-1.04	96hr, bgill, static, TerraTox	Rat, TerraTox	skin
0000095-57-8	CHLOROPHENOL		0.01		64	213.8	8.56			-0.43	1.02	96hr, FHM, Static, TerraTox	Mouse,	
0007790-94-5	CHLOROSULFONIC ACID				none									
0001897-45-6	CHLOROTHALONIL		0.02			41.319				-1.14	2.83	96hr, bgill, static, TerraTox	Mouse,	
0007738-94-5	CHROMIC ACID			0.01			0.74		CRC					Insol Cr (VI) cmpds
0010101-53-8	CHROMIC SULFATE			0.5										TLV for Cr metal & Cr(III) cmpds
0007440-47-3	CHROMIUM	1	0.01	0.5										Cr metal & Cr(III) cmpds
0001333-82-0	CHROMIUM AND COMPOUNDS	1		0.01			0.74		CRC					Insol Cr (VI) cmpds
0028407-37-6	CI DIRECT BLUE 218													
0002832-40-8	CIDISPERSEYELLOW													
0000081-88-9	CIFOODRED15									-0.27			Mouse,	
0000097-56-3	CISOLVENTYELLOWA					1278.2								
0007440-48-4	COBALT	2B		0.02										and inorganic cmpds
0007646-79-9	COBALT COMPOUNDS	2B		0.02										TLV for Cobalt
0007440-50-8	COPPER			0.05										& inorg cmpds; TLV for fume and respirable particles
0007758-98-7	COPPER COMPOUNDS			0.05						-0.27			Rat, TerraTox	TLV for Copper
0008001-58-9	CREOSOTE		2A											
0000108-39-4	CRESOLA		0.05	22	86	10.369	10.1			-0.35	0.29	96hr, FHM, Static, TerraTox	Rat, TerraTox	Cresol mixed isomer
0000095-48-7	CRESOLB		0.05	22	81	10.715	10.3			-0.05	0.77	96hr, FHM, Static, TerraTox	Rat, TerraTox	Cresol mixed isomer
0001319-77-3	CRESOLMIXEDISOMER		0	22										skin; all isomers
0000098-82-8	CUMENE		0.04	246	46	348.29				-1.07	1.28	96hr, FHM, Static, TerraTox	Rat, TerraTox	skin
0003251-23-8	CUPRIC NITRATE			0.05										TLV for Copper
0007758-98-7	CUPRIC SULFATE			0.05						-0.27			Rat, TerraTox	TLV for Copper
0000143-33-9	CYANIDE COMPOUNDS		0.04	no TWA		0.0047				0.88	2.46	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000110-82-7	CYCLOHEXANE			1030	-18	220.19				-0.98	0.38	96hr, bgill, static, TerraTox	Mouse,	
0000108-94-1	CYCLOHEXANONE		5	100	47	0.8935				-1.22	-0.81	96hr, FHM, Static, TerraTox	Mouse,	skin
0000096-12-8	DBCP	2B				80.736				0.14			Rat, TerraTox	
0001163-19-5	DECABROMODIPHENYLOX		0.01			0.0315								
0000095-50-1	DICHLOROBENZENE A		0.09	150	66	89.125				-0.53	1.4	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000106-46-7	DICHLOROBENZENE C	2B		60	66	60.256				-0.53	1.62	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0025321-22-6	DICHLOROBENZENE MIX			60	64									TLV for p-dichlorobenze
0000075-27-4	DICHLOROBROMOMETHANE	2B	0.02		none	10.813				-0.44			Mouse,	
0000075-71-8	DICHLORODIFLUOROMETHANE		0.2	4950		15.119								
0000107-06-2	DICHLOROETHANE	2B		40	16	1.9953				-0.69	-0.14	96hr, FHM, Static, TerraTox	Mouse,	
0000156-60-5	DICHLOROETHYLENE		0.02		6	13.057				-1.1			Rat, TerraTox	
0000075-09-2	DICHLOROMETHANE	2B	0.06	174	none	2.2464				-1.39	-0.56	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000076-14-2	DICHLOROTETRAFLUOROETHANE			6990		60.23								
0000111-42-2	DIETHANOLAMINE			2	138	0.0082		8.88		-0.83	-1.65	96hr, FHM, Static, TerraTox	Rat, TerraTox	skin
0000109-89-7	DIETHYLAMINE			15	-28	0.5518		11.09		-0.83	-1.07	96hr, FHM, Static, TerraTox	Mouse,	skin
0000117-81-7	DIETHYLHEXYLPHT	2B	0.02	5	207	851.14				-1.89	1.8	96hr, goldf, static, TerraTox	Rat, TerraTox	

Chemical Data

CAS Number	Chemical Name	IARC	RFD	TLV(TWA in mg/m ³)	FP (C)	BCF	pKa	pKa (ca)	pK notes	LD50, pT	c LC50, pT	Aquatic LC50 notes	LD50 notes	TLV Notes
0000084-66-2	DIETHYLPHTHALATE		0.8	5	162	117.49				-1.44	0.84	96hr, FHM, Static, TerraTox	Mouse,	
0000064-67-5	DIETHYLSULFATE	2A			78	1.784				-0.62			Mouse,	
0000822-06-0	DIISOCYANATES			0.034	140	133.38				-0.32			Mouse,	
0000124-40-3	DIMETHYLAMINE			9.2	15	0.0738		10.78		-0.85	-0.67	96hr, guppy, static, TerraTox	Mouse,	
0000121-69-7	DIMETHYLANILINE		0	25	63	20.701				-1.07	0.19	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000068-12-2	DIMETHYLFORMAMIDE	2B	0.1	30	58	0.0197				-1.58	-2.16	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000131-11-3	DIMETHYLPHALATE		10	5	156	57.544				-1.54	0.21	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000117-84-0	DIOCTYLPHTHALATE		0.02		219	7455.7				-2.08			Rat, TerraTox	
0000123-91-1	DIOXANE	2B		90	12	0.0679				-1.68	-2.05	96hr, FHM, Static, TerraTox	Rat, TerraTox	skin
0027176-87-0	DODECYLBENZENESULFONIC ACID									-0.3			Rat, TerraTox	
0000106-89-8	EPICHLOROHYDRIN	2A	0	1.9	33	0.4202				0.01	0.86	96hr, FHM, Static, TerraTox	Rat, TerraTox	skin
0000110-80-5	ETHOXYETHANOL		0.4	18	44	0.0528				-1.43	-2.05	96hr, bgill, static, TerraTox	Mouse,	skin
0000141-78-6	ETHYLACETATE		0.9	1440	-3	0.7556				-1.67	-0.42	96hr, FHM, Static, TerraTox	Mouse,	
0000140-88-5	ETHYLACRYLATE	2B		20	16	2.6013				-1.25	1.6	96hr, FHM, Static, TerraTox	Mouse,	
0000100-41-4	ETHYLBENZENE		0.1	434	22	120.14				-1.52	0.4	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000074-85-1	ETHYLENE			listed, no TLV		1.747								
0000142-59-6	ETHYLENE BIS DITHIOCARBAMATE					0.0017				-0.19	1.65	96hr, guppy, static, TerraTox	Rat, TerraTox	
0000107-15-3	ETHYLENEDIAMINE		0.02	25	34	0.0112		9.93		-0.91	-0.28	96hr, FHM, Static, TerraTox	Rat, TerraTox	skin
0000060-00-4	ETHYLENEDIAMINE-TETRAACETIC				33	5E-05				-0.01	0.69	96hr, FHM, Static, TerraTox	Mouse,	
0000107-21-1	ETHYLENEGLYCOL		2	no TWA		0.0029				-2.08	-2.93	96hr, FHM, Static, TerraTox	Mouse,	aerosol
0000075-21-8	ETHYLENEOXIDE	2A		1.8	>110	0.0873				-0.88	-0.28	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000096-45-7	ETHYLENETHIOUREA	2B	0			0.0411				-1.25	-2.87	96hr, guppy, static, TerraTox	Rat, TerraTox	
0000060-29-7	ETHYLETHER		0.2	1210	-40	1.0347				-1.22	-1.54	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0007705-08-0	FERRICHLORIDE			1										soluble iron salts
0010028-22-5	FERRICSULFATE			1										soluble iron salts
0010045-89-3	FERROUSAMMONIUM SULFATE			1										soluble iron salts
0007758-94-3	FERROUSCHLORIDE			1										soluble iron salts
0007720-78-7	FERROUSSULFATE			1										soluble iron salts
0007782-63-0	FERROUSSULFATE			1										soluble iron salts
0000133-07-3	FOLPET		0.1			327.2				-0.72	3	96hr, FHM, Static, TerraTox	Mouse,	
0000050-00-0	FORMALDEHYDE	2A	0.2	no TWA	56	0.3408	13.29			-0.15	0.1	96hr, FHM, Static, TerraTox	Mouse,	
0000064-18-6	FORMIC ACID	2		9.4	69	0.0528	3.75			-1.18			Mouse,	
0000076-13-1	FREON113		30			122.68								
0000110-17-8	FUMARIC ACID						3.03		CRC	-1.9			Rat, TerraTox	
0000109-99-9	FURAN, TETRAHYDRO-			590	-17	0.4291		-2.1		-1.5	-1.48	96hr, FHM, Static, TerraTox	Mouse,	
0000098-01-1	FURFURAL		0	7.9	73	538.75				0.17	0.67	96hr, FHM, Static, TerraTox	Rat, TerraTox	skin
0000110-80-5	GLYCOL ETHERS		0.4	18	44	0.0528				-1.43	-2.05	96hr, bgill, static, TerraTox	Mouse,	skin
0000110-54-3	HEXANE (N-HEXANE)		0.06	176	-23	705				-2.52	1.54	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000302-01-2	HYDRAZINE	2B		0.013	52	0.0021				-0.26	1.51	96hr, bgill, static, TerraTox	Mouse,	skin
0007647-01-0	HYDROCHLORICACID			no TWA		0.5075								
0007664-39-3	HYDROGENFLUORIDE			no TWA	none									
0000078-83-1	ISOBUTYL ALCOHOL		0.3	152	37	0.8046				-1.52	-1.3	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000078-59-1	ISOPHORONE		0.2	no TWA	84	7.0795				-1.23	-0.22	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0004098-71-9	ISOPHORONE DIISOCYANATE			0.045	84									
0000067-63-0	ISOPROPYLALCOHOL			983	22	0.1818				-1.78	-2.21	96hr, FHM, Static, TerraTox	Mouse,	
0000080-05-7	ISOPROPYLDIENED		0.05							-1.02			Mouse,	
0007439-92-1	LEAD	2B		0.05										and inorganic compounds
0007758-97-6	LEAD CHROMATE	1		0.012										as Cr, .05 as Lead
0007758-95-4	LEAD COMPOUNDS			0.05										TLV for Lead
0010099-74-8	LEADNITRATE			0.05										TLV for Lead

Chemical Data

CAS Number	Chemical Name	IARC	RFD	TLV(TWA in mg/m ³)	FP (C)	BCF	pKa	pKa (ca)	pK notes	LD50, pT	c LC50, pT	Aquatic LC50 notes	LD50 notes	TLV Notes
0014307-35-8	LITHIUM CHROMATE			0.05										water sol Cr (VI) cmpds
0000110-16-7	MALEICACID						1.83		CRC					
0000108-31-6	MALEICANHYDRIDE		0.1	1	103	4.8773				-0.61			Rat, TerraTox	
0007439-96-5	MANGANESE		0.14	0.2										and inorganic compounds
0001344-43-0	MANGANESE COMPOUNDS			0.2										TLV for Manganese
0000126-98-7	METHACRYLONITRILE		0	2.7	12	0.6805				0.6			Mouse,	skin
0000067-56-1	METHANOL		0.5	262	11	0.0326	15.5			-2.25	-2.95	96hr, FHM, Static, TerraTox	Rat, TerraTox	skin
0000109-86-4	METHOXYETHANOL			16	46	0.0326				-1.49			Rat, TerraTox	skin
0000096-33-3	METHYLACRYLATE		0.03	7	6	0.348				-0.51			Rat, TerraTox	skin
0000079-22-1	METHYLCHLOROFORMATE				17									
0005124-30-1	METHYLENE BIS(4-			0.054										
0000101-14-4	METHYLENEBISCHLORO ←	2A	0	0.11		313.85				-0.38			Mouse,	skin
0000101-68-8	METHYLENEBISPHENYL			0.051						-0.94			Mouse,	
0000078-93-3	METHYLETHYLKETONE		0.6	590	-3	0.3005				-1.67	-1.65	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000108-10-1	METHYLISOBUTYLKETO		0.08	205	13	2.5473				-1.32	-0.71	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000080-62-6	METHYLMETHACRYLATE		0.08	410	10	2.9498				-1.56	-0.41	96hr, FHM, Static, TerraTox	Mouse,	
0001634-04-4	METHYLTBUTYLET			144	-10	1.5136				-1.66	-0.88	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000090-94-8	MICHLERSKETONE					538.75								
0000075-04-7	MONOETHYLAMINE			9.2	-16	0.1247		10.81		-0.95			Rat, TerraTox	skin
0000924-42-5	N-METHYLOLACRYLAMIDE													
0000091-20-3	NAPHTHALENE		0.04	52	79	426.58				-0.62	1.32	96hr, FHM, Static, TerraTox	Mouse,	
0007440-02-0	NICKEL	2B	0.02	0.5										
0000373-02-4	NICKEL ACETATE			0.05										soluble Ni cmpds
0006018-89-9	NICKEL ACETATE TETRAHYDRATE			0.05										soluble Ni cmpds
0037211-05-5	NICKEL AND COMPOUNDS			0.05										soluble Ni cmpds
0007761-88-8	NITRATE COMPOUNDS			0.01						0.53	4.28	96hr, FHM, Static, TerraTox	Mouse,	soluble Ag cmpds
0007697-37-2	NITRICACID			5.2			>0							
0010102-43-9	NITRICOXIDE			31										
0000098-95-3	NITROBENZENE		0	5	88	15.136				-0.6	0.01	96hr, FHM, Static, TerraTox	Rat, TerraTox	skin
0010102-44-0	NITROGEN DIOXIDE			5.6										
0000088-75-5	NITROPHENOLA					6.9641	7.23			-0.38	0	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000099-55-8	NITROTOLUIDINE					1.784				-0.58	0.35	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0020325-40-0	O-DIANISIDINE DIHYDROCHLORIDE													
0030525-89-4	PARAFORMALDEHYDE				71									
0000594-42-3	PERCHLOROMETHYLMERCAPTAN			0.76	none									
0000108-95-2	PHENOL		0.6	19	79	17.378	9.99			-0.46	0.51	96hr, FHM, Static, TerraTox	Mouse,	skin
0000106-50-3	PHENYLENEDIAMINE		0.19	0.1		0.0411				0.13			Rat, TerraTox	
0000075-44-5	PHOSGENE			0.4		0.037								
0007664-38-2	PHOSPHORICACID			1			2.12		CRC					
0010025-87-3	PHOSPHORUS OXYCHLORIDE			0.63						-0.39			Rat, TerraTox	
0000117-81-7	PHTHALATE ESTERS	2B	0.02	5	207	851.14				-1.89	1.8	96hr, goldf, static, TerraTox	Rat, TerraTox	
0000085-44-9	PHTHALICANHYDRIDE		2	6.1	151	0.0446				-1.43			Rat, TerraTox	
0000109-06-8	PICOLINE				26	1.6753				-0.86	-0.98	96hr, FHM, Static, TerraTox	Mouse,	
0001336-36-3	POLYCHLORINATEDBIPH ←	2A	0	0.5										skin; TLV for chlorodiphenyl (0011097-69-1)
0009016-87-9	POLYMERIC DIPHENYLMETHANE													
0001310-58-3	POTASSIUMHYDROXIDE			no TWA					>0					
0007722-64-7	POTASSIUMPERMANGANATE			0.2										TLV for Manganese and inorganic compounds
0000079-09-4	PROPIONICACID			30	51	0.3268	4.87			-1.55			Rat, TerraTox	
0000107-12-0	PROPIONITRILE				6	0.2289				0.19	-1.44	96hr, FHM, Static, TerraTox	Mouse,	
0000075-55-8	PROPYLENEIMINE	2B		4.7	-15					0.48			Rat, TerraTox	skin

Chemical Data

CAS Number	Chemical Name	IARC	RFD	TLV(TWA in mg/m^3)	FP (C)	BCF	pKa	pKa (ca)	pK notes	LD50, pT	c LC50, pT	Aquatic LC50 notes	LD50 notes	TLV Notes
0000075-56-9	PROPYLENEOXIDE	2B		48	-37	0.1936				-0.82	-0.39	96hr, bgill, static, TerraTox	Rat, TerraTox	
0000110-86-1	PYRIDINE		0	16	20	0.639		5.23		-1.05	-0.1	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000108-46-3	RESORCINOL			45		0.875	9.4			-0.26	0.04	96hr, FHM, Static, TerraTox	Mouse,	
0000057-12-5	SELENIUM		0.02	0.2										and compounds
0007782-49-2	SELENIUM		0.01	0.2										and compounds
0007446-08-4	SELENIUM AND COMPOUNDS			0.2										and compounds
0007783-00-8	SELENIUM CMPD?		0.01	0.2										and compounds
0007488-56-4	SELENIUM DIOXIDE			0.2						0.02			Rat, TerraTox	and compounds
0007783-79-1	SELENIUM HEXAFLUORIDE			0.16										as Selenium
0012033-59-9	SELENIUM NITRIDE			0.2										and compounds
0014832-90-7	SELENIUM OXIDE			0.2										and compounds
0007440-22-4	SILVER		0.01	0.1										
0007783-90-6	SILVER AND COMPOUNDS			0.01										sol cmpds, as Silver
0007783-91-7	SILVER CHLORITE			0.01										sol cmpds, as Silver
0007784-01-2	SILVER CHROMATE			0.01										sol cmpds, as Silver
0000506-64-9	SILVER CYANIDE		0.1	0.01										sol cmpds, as Silver
0007761-88-8	SILVER NITRATE			0.01						0.53	4.28	96hr, FHM, Static, TerraTox	Mouse,	sol cmpds, as Silver
0007761-88-8	SILVERNITRATE			0.01						0.53	4.28	96hr, FHM, Static, TerraTox	Mouse,	sol cmpds, as Silver
0007440-23-5	SODIUM													
0010588-01-9	SODIUM BICHROMATE	1		0.01										insol Cr (VI) cmpds
0007631-90-5	SODIUM BISULFITE			5						-1.28	0.64	96hr, mosqf, static, TerraTox	Rat, TerraTox	
0000143-33-9	SODIUM CYANIDE (Na(CN))		0.04	no TWA		0.0047				0.88	2.46	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000128-04-1	SODIUM DIMETHYLDITHIOCARBAMATE									-0.84	1.74	96hr, guppy, static, TerraTox	Rat, TerraTox	
0025155-30-0	SODIUM													
0007681-49-4	SODIUM FLUORIDE													
0016721-80-5	SODIUM HYDROSULFIDE													
0001310-73-2	SODIUM HYDROXIDE			no TWA				>0						
0007681-52-9	SODIUM HYPOCHLORITE													
0010022-70-5	SODIUM HYPOCHLORITE													
0000124-41-4	SODIUM METHYLATE													
0007632-00-0	SODIUM NITRITE					0.0011					1.48	96hr, FHM, Static, TerraTox		
0007558-79-4	SODIUM PHOSPHATE, DIBASIC							12.67	CRC					
0007601-54-9	SODIUM PHOSPHATE, TRIBASIC										0.76	96hr, mosqf, static, TerraTox		
0007758-29-4	SODIUM PHOSPHATE, TRIBASIC													
0010101-89-0	SODIUM PHOSPHATE, TRIBASIC													
0000100-42-5	STYRENE MONOMER	2B	0.2	85	31	97.464				-0.48	1.41	96hr, FHM, Static, TerraTox	Mouse,	skin
0007664-93-9	SULFURICACID	1		1				>0						H2SO4 in strong inorg acid mists
0008014-95-7	SULFURICACID (FUMING)							>0						
0000127-18-4	TETRACHLOROETHYLENE	2B	0.01	170	none	38.905				-1.26	1.09	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000108-98-5	THIOPHENOL		0		51	32.137	6.52			0.38			Rat, TerraTox	
0000062-56-6	THIOUREA	2B				0.0206				-0.22			Rat, TerraTox	
0000108-88-3	TOLUENE		0.2	188	4	45.879				-1.74	0.43	96hr, FHM, Static, TerraTox	Rat, TerraTox	skin
0000091-08-7	TOLUENEDIISOCYANATEA	2B				411.34								
0000584-84-9	TOLUENEDIISOCYANATEB	2B		0.036	121	411.34				-1.52	0.02	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0026471-62-5	TOLUENEDIISOCYANATEC	2B								-1.05			Mouse,	
0000071-55-6	TRICHLOROETHANE A			1910	none	8.9125				-1.92	0.45	96hr, FHM, Static, TerraTox	Rat, TerraTox	
0000079-01-6	TRICHLOROETHYLENE	2A		269	none	19.851				-1.26	0.47	96hr, FHM, Static, TerraTox	Mouse,	
0000075-69-4	TRICHLOROMONOFUOROMETHANE		0.3	no TWA	none	32.817				-1.77			Rat, TerraTox	
0000121-44-8	TRIETHYLAMINE			4.1	-6	3.3449		10.72		-0.66			Rat, TerraTox	skin
0000075-63-8	TRIFLUOROBROMOMETHANE			6090		8.0641								

Chemical Data

CAS Number	Chemical Name	IARC	RFD	TLV(TWA in mg/m^3)	FP (C)	BCF	pKa	pKa (ca)	pK notes	LD50, pT	c LC50, pT	Aquatic LC50 notes	LD50 notes	TLV Notes	
0000075-50-3	TRIMETHYLAMINE			12	-6	0.2289		9.79							
0000095-63-6	TRIMETHYLBENZ				48	327.2					1.21	96hr, FHM, Static, TerraTox			
0000108-05-4	VINYLACETATE	2B	1	35	-6	0.5754				-1.27	0.57	96hr, FHM, Static, TerraTox	Mouse,		
0000095-47-6	XYLENEB		2	434	32	112.83				-1.67	0.81	96hr, FHM, Static, TerraTox	Rat, TerraTox		
0000106-42-3	XYLENEC		2	434	27	120.14				-1.67	1.21	96hr, FHM, Static, TerraTox	Rat, TerraTox		
0001330-20-7	XYLENEMIXEDISOMER		2	434	29	120.14				-1.61	0.87	96hr, FHM, Static, TerraTox	Rat, TerraTox		
0007440-66-6	ZINC		0.3												
0001314-13-2	ZINC AND COMPOUNDS			5						-1.99			Mouse,	TLV for Zinc dust=10	
0001314-13-2	ZINC OXIDE FUME			5						-1.99			Mouse,		
0007733-02-0	ZINC SULFATE														
0014639-98-6	ZINCAMMONIUM CHLORIDE														
0001332-07-6	ZINCBORATE														
0007733-02-0	ZINCSULFATE														
		47	95	190	114	136	21	14		137	102		102	137	94

Appendix H: Category 3 Chemicals with CAS Numbers

CAS Number	Chemical Name
1717-00-6	1,1-DICHLORO - 1 FLUOROETHANE
507-55-1	1,3-DICHLORO-1,1,2,2,3-PENTAFLUOROPROPANE
872-50-4	1-METHYL-2-PYRROLIDONE
540-84-1	2,2,4-TRIMETHYLPENTANE
612-83-9	3,3'DICHLOROBENZIDINE DIHYDROCHLORIDE
55406-53-6	3-IODO-2-PROPYNYL BUTYLCARBAMATE
75-07-0	ACETALDEHYDE
108-24-7	ACETIC ANHYDRIDE
75-05-8	ACETONITRILE
98-86-2	ACETOPHENONE
79-10-7	ACRYLICACID
124-04-9	ADIPIC ACID
107-05-1	ALLYLCHLORIDE
7429-90-5	ALUMINUM
1344-28-1	ALUMINUMOXIDE
10043-01-3	ALUMINUMSULFATE
7664-41-7	AMMONIA
1341-49-7	AMMONIUMBIFLUORIDE
12125-02-9	AMMONIUMCHLORIDE
12125-01-8	AMMONIUMFLUORIDE
1336-21-6	AMMONIUMHYDROXIDE
7773-06-0	AMMONIUMSULFAMATE
62-53-3	ANILINE
7440-36-0	ANTIMONY
01-00-0	ANTIMONY COMPOUNDS
1309-64-4	ANTIMONYTRIOXIDE
7440-39-3	BARIUM
01-00-2	BARIUM COMPOUNDS
94-36-0	BENZOYLPEROXIDE
92-52-4	BIPHENYL
103-23-1	BISETHYLHEXYL
7726-95-6	BROMINE
353-59-3	BROMOCHLORODIFLUOROMETHANE (HALON 1211)
74-83-9	BROMOMETHANE
110-19-0	BUTYL ACETATE-I
540-88-5	BUTYL ACETATE-T
123-86-4	BUTYLACETATE
141-32-2	BUTYLACRYLATE
75-65-0	BUTYLALCOHOLC
85-68-7	BUTYLBENZYLPHTHALA
84-74-2	BUTYLPHTHALATE
123-72-8	BUTYRALDEHYDE
107-92-6	BUTYRIC ACID
75-20-7	CALCIUM CARBIDE
7778-54-3	CALCIUM HYPOCHLORITE
105-60-2	CAPROLACTAM DUST AND VAPOR
106-47-8	CHLOROANILINE
108-90-7	CHLOROBENZENE
75-45-6	CHLORODIFLUOROMETHANE
74-87-3	CHLOROMETHANE
95-57-8	CHLOROPHENOL

Appendix H: Category 3 Chemicals with CAS Numbers

CAS Number	Chemical Name
7790-94-5	CHLOROSULFONIC ACID
1897-45-6	CHLOROTHALONIL
10101-53-8	CHROMIC SULFATE
28407-37-6	CI DIRECT BLUE 218
2832-40-8	CIDISPERSEYELLOW
81-88-9	CIFOODRED15
97-56-3	CISOLVENTYELLOWA
7440-48-4	COBALT
01-01-3	COBALT COMPOUNDS
7440-50-8	COPPER
01-01-5	COPPER COMPOUNDS
8001-58-9	CREOSOTE
108-39-4	CRESOLA
95-48-7	CRESOLB
1319-77-3	CRESOLMIXEDISOMER
98-82-8	CUMENE
3251-23-8	CUPRIC NITRATE
7758-98-7	CUPRIC SULFATE
110-82-7	CYCLOHEXANE
108-94-1	CYCLOHEXANONE
1163-19-5	DECABROMODIPHENYLOX
95-50-1	DICHLOROBENZENE A
106-46-7	DICHLOROBENZENE C
25321-22-6	DICHLOROBENZENE MIX
75-27-4	DICHLOROBROMOMETHANE
75-71-8	DICHLORODIFLUOROMETHANE
156-60-5	DICHLOROETHYLENE
75-09-2	DICHLOROMETHANE
76-14-2	DICHLOROTETRAFLUOROETHANE
111-42-2	DIETHANOLAMINE
109-89-7	DIETHYLAMINE
117-81-7	DIETHYLHEXYLPHT
84-66-2	DIETHYLPHTHALATE
822-06-0	DIISOCYANATES
124-40-3	DIMETHYLAMINE
121-69-7	DIMETHYLANILINE
131-11-3	DIMETHYLPHTHALATE
117-84-0	DIOCTYLPHTHALATE
27176-87-0	DODECYLBENZENESULFONIC ACID
5952-26-1	ETHANOL, 2,2-OXYDI, DICARBAMATE
110-80-5	ETHOXYETHANOL
140-88-5	ETHYLACRYLATE
100-41-4	ETHYLBENZENE
74-85-1	ETHYLENE
142-59-6	ETHYLENE BIS DITHIOCARBAMATE
107-15-3	ETHYLENEDIAMINE
60-00-4	ETHYLENEDIAMINE-TETRAACETIC ACID (EDTA)
96-45-7	ETHYLENETHIOUREA
60-29-7	ETHYLETHER
133-07-3	FOLPET
64-18-6	FORMIC ACID

Appendix H: Category 3 Chemicals with CAS Numbers

CAS Number	Chemical Name
1336-36-3	POLYCHLORINATEDBIPH
9016-87-9	POLYMERIC DIPHENYLMETHANE DIISOCYANATE
1310-58-3	POTASSIUMHYDROXIDE
7722-64-7	POTASSIUMPERMANGANATE
79-09-4	PROPIONICACID
107-12-0	PROPIONITRILE
110-86-1	PYRIDINE
108-46-3	RESORCINOL
7440-22-4	SILVER
01-03-7	SILVER AND COMPOUNDS
7761-88-8	SILVERNITRATE
7440-23-5	SODIUM
10588-01-9	SODIUM BICHROMATE
7631-90-5	SODIUM BISULFITE
128-04-1	SODIUM DIMETHYLDITHIOCARBAMATE
25155-30-0	SODIUM DODECYLBENZENESULFONATE
7681-49-4	SODIUM FLUORIDE
16721-80-5	SODIUM HYDROSULFIDE
1310-73-2	SODIUM HYDROXIDE
7681-52-9	SODIUM HYPOCHLORITE
10022-70-5	SODIUM HYPOCHLORITE
124-41-4	SODIUM METHYLATE
7632-00-0	SODIUM NITRITE
100-42-5	STYRENEMONOMER
108-98-5	THIOPHENOL
62-56-6	THIOUREA
108-88-3	TOLUENE
71-55-6	TRICHLOROETHANE
75-69-4	TRICHLOROMONOFUOROMETHANE
121-44-8	TRIETHYLAMINE
75-63-8	TRIFLUOROBROMOMETHANE
75-50-3	TRIMETHYLAMINE
95-63-6	TRIMETHYLBENZ
108-05-4	VINYLACETATE
95-47-6	XYLENEB
106-42-3	XYLENEC
1330-20-7	XYLENEMIXEDISOMER
7440-66-6	ZINC
01-03-9	ZINC AND COMPOUNDS
1314-13-2	ZINC OXIDE FUME
14639-98-6	ZINCAMMONIUM CHLORIDE

Note: This list of Category 3 chemicals does not contain the names of chemicals that have never been reported under TURA.

Appendix H: Category 3 Chemicals with CAS Numbers

CAS Number	Chemical Name
76-13-1	FREON113
110-17-8	FUMARIC ACID
109-99-9	FURAN, TETRAHYDRO-
98-01-1	FURFURAL
01-02-2	GLYCOL ETHERS
422-56-0	HCFC-225CA
110-54-3	HEXANE (N-HEXANE)
7647-01-0	HYDROCHLORICACID
74-90-8	HYDROGEN CYANIDE
7664-39-3	HYDROGENFLUORIDE
78-59-1	ISOPHORONE
4098-71-9	ISOPHORONE DIISOCYANATE
67-63-0	ISOPROPYLALCOHOL
80-05-7	ISOPROPYLIDENED
554-13-2	LITHIUM CARBONATE
14307-35-8	LITHIUM CHROMATE
110-16-7	MALEICACID
108-31-6	MALEICANHYDRIDE
7439-96-5	MANGANESE
01-02-7	MANGANESE COMPOUNDS
126-98-7	METHACRYLONITRILE
109-86-4	METHOXYETHANOL
96-33-3	METHYLACRYLATE
79-22-1	METHYLCHLOROFORMATE
5124-30-1	METHYLENE BIS(4-CYCLOHEXYLISOCYANATE)
101-14-4	METHYLENEBISCHLORO
108-10-1	METHYLISOBUTYLKETO
80-62-6	METHYLMETHACRYLATE
1634-04-4	METHYLTBUTYLET
75-79-6	METHYLTIRCHLOROSILANE
90-94-8	MICHLERSKETONE
75-04-7	MONOETHYLAMINE
91-20-3	NAPHTHALENE
7440-02-0	NICKEL
01-09-0	NITRATE COMPOUNDS
7697-37-2	NITRICACID
10102-43-9	NITRICOXIDE
10102-44-0	NITROGEN DIOXIDE
88-75-5	NITROPHENOLA
99-55-8	NITROTOLUIDINE
924-42-5	N-METHYLOLACRYLAMIDE
20325-40-0	O-DIANISIDINE DIHYDROCHLORIDE
30525-89-4	PARAFORMALDEHYDE
594-42-3	PERCHLOROMETHYLMERCAPTAN
108-95-2	PHENOL
106-50-3	PHENYLENEDIAMINE
7664-38-2	PHOSPHORICACID
10025-87-3	PHOSPHORUS OXYCHLORIDE
01-03-3	PHTHALATE ESTERS
85-44-9	PHTHALICANHYDRIDE
109-06-8	PICOLINE



Legislative
Assembly
of Ontario



Assemblée
législative
de l'Ontario

Ontario Legislative Library
Research and Information Services
Room 2520, Whitney Block
Queen's Park
Toronto, Ontario M7A 1A9
Telephone: (416) 325-3675
Facsimile: (416) 325-3696

Bibliothèque de l'Assemblée législative de l'Ontario
Services de recherches et d'information
Bureau 2520, Edifice Whitney
Queen's Park
Toronto (Ontario) M7A 1A9
Téléphone: (416) 325-3675
Télécopieur: (416) 325-3696

090094F1

May 29, 2009

MEMORANDUM TO: Standing Committee on
General Government

FROM: Marta Kennedy
Research Officer

SUBJECT: Follow-up to Background Information on
Bill 167, the *Toxics Reduction Act, 2009*

This memo is a follow-up to the memo provided to the Standing Committee on General Government on May 28, 2009 regarding the exclusion of metals and alloys from the application of the Massachusetts *Toxics Use Reduction Act* (Massachusetts TURA).

That memo indicated that while alloys of copper, nickel, chromium, cobalt manganese and silver had been removed from the Massachusetts Toxic and Hazardous Substances List, these metals in non-alloy form may still be subject to the application of the Massachusetts TURA, and that we were awaiting confirmation of this.

The attached document, provided by the Massachusetts Toxic Uses Reduction Institute, indicates that nickel, chromium, cobalt and manganese in non-alloy form are reportable under the Massachusetts TURA. Copper and silver are substances reportable only to the U.S. federal Environmental Protection Agency. The document also indicates that other metals are subject to TURA reporting.

Note that the document states that it applies to the calendar year 2002. However, it is the list that is currently in use.¹ The full alphabetical list of Massachusetts TURA reportable substances begins on page 19 of the document.

¹ Telephone interview, Policy Analyst, Massachusetts Toxics Use Reduction Institute, 28 May 2009.

Appendix B

WHAT TOXIC SUBSTANCES ARE SUBJECT TO TURA REPORTING?

All of the substances listed under Section 313 of EPCRA, and all of the substances that are on the federal Superfund (CERCLA) list of chemicals are reportable under TURA, except for those chemicals that have been delisted by the Administrative Council on Toxics Use Reduction. The list of TURA chemicals subject to reporting for reports due July 1, 2002 is located at the end of this Appendix. (The column entitled "ADD" refers to the year in which the chemical was added to the TURA list.) They include:

- EPCRA 313 and CERCLA chemicals and chemical categories sorted by chemical name
- EPCRA 313 and CERCLA chemicals and chemical categories sorted by CAS number

The following chemicals have been delisted from TURA (but in certain cases are reportable under EPCRA):

Reporting Year/Chemical Delisted	Reason/Note
1994	
Barium Sulfate	EPCRA delisting and not CERCLA reportable
All copper phthalocyanine compounds that are substituted with only hydrogen and/or chlorine and/or bromine (delisted from the copper compounds category)	EPCRA delisting and not CERCLA reportable
High molecular weight glycol ethers	EPCRA delisting and not CERCLA reportable
1995	
Certain Metal Alloys (refer to Appendix F)	TURA Administrative Council delisting
Chromium (III) Oxide from chromium compounds category	TURA Administrative Council delisting
Ammonium Sulfate Solution (CAS#7783-20-2)	EPCRA delisting and not CERCLA reportable
Ammonium Nitrate Solution (CAS#6484-52-2)	EPCRA delisting and not CERCLA reportable
1996	
Hydroquinone (except for the manufacture of the chemical)	TURA Administrative Council delisting
Acetic Acid at concentrations of 12% or less	TURA Administrative Council delisting
Di-(2-ethylhexyl)adipate (DEHA) (CAS#103-23-1)	EPCRA delisting and not CERCLA reportable
1997	

The 1996 EPA TRI guidance document, "List of Toxic Chemicals within the Water Dissociable Nitrate Compounds Category and Guidance for Reporting" (EPA 745-R-96-004), provides a detailed description of how to report this chemical category. The following general overview is from the guidance document:

"Chemicals within the nitrate compounds category are only reportable when in aqueous solution. All water dissociable nitrate compounds are included in the nitrate compounds category, including ammonium nitrate. Specifically listed section 313 chemicals *are not* included in threshold determinations for chemical categories such as the water dissociable nitrate compounds category. Specifically listed toxic chemicals are subject to their own individual threshold determinations. As of December 1, 1994, ammonium nitrate (solution) is not an individually listed chemical on the EPCRA section 313 list. However, ammonium nitrate is still subject to reporting under the nitrate compounds category. In addition, the aqueous ammonia from the dissociation of ammonium nitrate when in aqueous solution is subject to reporting under the ammonia listing."

The following is an example from the TRI guidance document:

✓ Example

In a calendar year, a facility manufactures as byproducts, 20,000 pounds of sodium nitrate and 10,000 pounds of calcium nitrate, both in aqueous solutions, and releases these solutions to wastewater streams. The total quantity of nitrate compounds manufactured by the facility is the sum of the two chemicals, or 30,000 pounds, which exceeds the manufacturing threshold quantity of 25,000 pounds. The facility therefore is required to report for the nitrate compounds category.

There are three diisocyanates that are reported individually under EPCRA, and not as the diisocyanate chemical category:

- Toluene-2,4-diisocyanate (584-84-9)
- Toluene-2,6-diisocyanate (91-08-7)
- Toluene diisocyanate (mixed isomers) (26471-62-5)

Rules for Reporting Glycol Ethers

There are separate categories for glycol ethers defined under EPCRA and CERCLA.

(Please refer to the TRI guidance document, "List of Toxic Chemicals within the Glycol Ethers Category and Guidance for Reporting," EPA 745-R-95-006.)

Reporting Guidance

EPCRA: Glycol Ethers are reportable as the glycol ethers category, N230. The

“ . . . The chemical ammonium hydroxide (NH₄OH) is a misnomer. It is a common name used to describe a solution of ammonia in water (i.e., aqueous ammonia), typically a concentrated solution of 28 to 30 percent ammonia. EPA has consistently responded to questions regarding the reportability of these purported ammonium hydroxide solutions under the EPCRA Section 313 ammonia listing by stating that these are 28 to 30 percent solutions of ammonia in water and that the solutions are reportable under EPCRA Section 313 ammonia listing. For a more detailed discussion, see page 34175 of the Federal Register final rule of June 30, 1995 (60 FR 34172).

Facilities should use the percent total ammonia specified on the label of ammonium hydroxide solutions they purchase to determine the total ammonia content in these solutions. Ammonium hydroxide has the chemical formula NH₄OH; however, as mentioned above, strong evidence indicates that the species NH₄OH does not exist. Bottles of concentrated aqueous ammonia purchased from chemical supply companies are almost always labeled ammonium hydroxide. These solutions primarily consist of molecules of NH₃ dissolved in water (along with small amounts of ionized ammonia) . . .”

Please note that different chemical suppliers will reference the % of ammonia in different ways. Therefore, it is recommended that facilities contact their chemical suppliers to specify the amount of ammonia per gallon. This question could be specified in “percent by weight per gallon” or in “number of pounds per gallon” of solution, for example.

✓ Examples

Example 1:

Facility otherwise uses 1,000,000 pounds of 30% solution by weight of ammonium hydroxide (30% ammonia by weight).

$$1,000,000 \text{ pounds} \times 0.30 = 300,000 \text{ pounds of ammonia}$$

Only 10% of ammonia is reportable on Form R per EPA Guidance for Reporting Aqueous Ammonia

$$300,000 \times 0.10 = 30,000 \text{ pounds of ammonia}$$

This facility would complete one Form S and one Form R for 30,000 pounds of reportable ammonia (see EPCRA Guidance for Reporting Aqueous Ammonia).

✓ Examples

Example 2:

✓ **Example**

Hydrogen Cyanide: EPCRA category (Cyanide Compounds), EPCRA specifically listed
Report as: EPCRA specific chemical (Hydrogen Cyanide)

1,2,4 Trichlorobenzene: EPCRA specifically listed, CERCLA category (Chlorinated Benzenes)

Report as: EPCRA specific chemical (1,2,4 Trichlorobenzene)

Row 3:

When a specifically listed CERCLA chemical falls within an EPCRA listed category, it should be reported **only under the EPCRA chemical category and not under the specific chemical name.**

✓ **Example**

Calcium Cyanide: EPCRA category (Cyanide Compounds), CERCLA specifically listed
Report as: EPCRA category (Cyanide Compounds)

Row 4:

When a specifically listed CERCLA chemical falls within a CERCLA listed category, it should be reported **only as the specific CERCLA chemical.**

✓ **Example**

• Benzenesulfonyl Chloride: CERCLA specifically listed, CERCLA category (Chlorinated Benzenes)
Report as: CERCLA specific chemical (Benzenesulfonyl Chloride)

Row 5:

Chemicals falling under an EPCRA chemical category or categories which are not specifically listed under EPCRA or CERCLA, should be reported under the EPCRA chemical category or categories.

✓ **Example: Lead Chromate, Reporting Two Competing Compound Classes**

If you are reporting lead chromate you need to report under the lead compounds and chromium compounds categories

- Report the SAME weight for Lead Compounds and Chromium Compounds use (total weight of the compound) on EACH Form S.
- For Byproduct tracking, report ONLY the weight of the reportable constituent for each category.

Section 2: Optional Questions

When the amounts reported in c, d and e in Section 1 are added together, the sum will in many cases equal the sum of f and g. In other words, lines c,d and e will often form a "materials balance." If lines c,d and e are not in approximate balance, you may use this section to explain why. Indicate all the reasons that apply by entering the number of pounds on the appropriate line below (e.g., 4,000 Chemical was held in inventory).

a. Chemical was recycled on site

b. Chemical was consumed or transformed

300; 33,000

c. Chemical was held in inventory

d. Chemical is a compound

e. Other (explain below)

f. Did anything non-routine occur at your facility during the reporting year which affected the data reported? Yes No If yes, please explain.

Section 1: Facility-Wide Use of Listed Chemical

1012

Chromium Compounds

a. CAS #

b. Chemical Name (Dioxin will be assumed to be grams, decimal points may be used)

Facility-wide use of chemical identified in a. Enter the total amount (in POUNDS, except for dioxin) for each applicable category. **NOTE:** 'Generated as byproduct' (item f.) generally means all waste containing the listed chemical before the waste is treated or recycled. Please refer to the reporting instructions before completing this section.

c. Manufactured

d. Processed

350

e. Otherwise used

f. Generated as Byproduct

33,000

g. Shipped in or as product

Section 2: Optional Questions

When the amounts reported in c, d and e in Section 1 are added together, the sum will in many cases equal the sum of f and g. In other words, lines c,d and e will often form a "materials balance." If lines c,d and e are not in approximate balance, you may use this section to explain why. Indicate all the reasons that apply by entering the number of pounds on the appropriate line below (e.g., 4,000 Chemical was held in inventory).

a. Chemical was recycled on site

b. Chemical was consumed or transformed

See above

c. Chemical was held in inventory

d. Chemical is a compound

e. Other (explain below)

Summary of TURA Reportable Chemical Categories for Calendar Year 2002

TURA requires reporting on the chemical categories listed below. The individual chemicals included in each chemical category should always be reported in their parent chemical category (e.g., antimony compounds), and not as individual chemicals. Please note that this is not an exhaustive list of individual chemicals within the chemical categories.

Chemical Category	CAS No.	Chemical Name
Antimony Compounds Includes any unique chemical substance that contains antimony as part of the chemical's infrastructure. Includes, but is not limited to:	1309-64-4	Antimony Trioxide
	7647-18-9	Antimony Pentachloride
	7783-56-4	Antimony Trifluoride
	7789-61-9	Antimony Tribromide
	10025-91-9	Antimony Trichloride
	28300-74-5	Antimony Potassium Tartrate
Arsenic Compounds Includes any unique chemical substance that contains arsenic as part of the chemical's infrastructure. Includes, but is not limited to:	692-42-2	Diethylarsine
	696-28-6	Dichlorophenylarsine
	1303-28-2	Arsenic Pentoxide
	1303-32-8	Arsenic Disulfide
	1303-33-9	Arsenic Trisulfide
	1327-52-2	Arsenic Acid
	1327-53-3	Arsenic Trioxide
	7631-89-2	Sodium Arsenate
	7645-25-2	Lead Arsenate
	7778-39-4	Arsenic Acid
	7778-44-1	Calcium Arsenate
	7784-34-1	Arsenous Trichloride
	7784-40-9	Lead Arsenate
	7784-41-0	Potassium Arsenate
	7784-46-5	Sodium Arsenite
10102-48-4	Lead Arsenate	
10124-50-2	Potassium Arsenate	
52740-16-6	Calcium Arsenate	
Barium Compounds Includes any unique chemical substance that contains barium as part of the chemical's infrastructure. Does not include barium sulfate, CAS # 7727-43-7. Includes, but is not limited to:	542-62-1	Barium Cyanide
Beryllium Compounds Includes any unique chemical substance that contains	7787-47-5	Beryllium Chloride
	7787-49-7	Beryllium Fluoride
	7787-55-5	Beryllium Nitrate

Copper Compounds Includes any unique chemical substance that contains copper as part of the chemical's infrastructure. Does not include copper phthalocyanine compounds that are substituted with only hydrogen, and/or chlorine, and/or bromine. Includes, but is not limited to:	137-29-1	Copper, bis(dimethylcarbamodithioato-s-s)-
	544-92-3	Copper Cyanide
	815-82-7	Cupric Tartrate
	3251-23-8	Cupric Nitrate
	5893-66-3	Cupric Oxalate
	7447-39-4	Cupric Chloride
	7758-98-7	Cupric Sulfate
	10380-29-7	Cupric Sulfate, Ammoniated

Chemical Category

CAS No.

Chemical Name

Cyanide Compounds X^+CN^- where X = H ⁺ or any other group where a formal dissociation may occur. For example KCN or CA(Cn) ₂ . Includes, but is not limited to:	57-12-5	Cyanides
	143-33-9	Sodium Cyanide
	151-50-8	Potassium Cyanide
	460-19-5	Cyanogen
	506-61-6	Potassium Silver Cyanide
	506-64-9	Silver Cyanide
	506-68-3	Cynogen Bromide
	506-77-4	Cyanogen Chloride
	542-62-1	Barium Cyanide
	544-92-3	Copper Cyanide
	557-19-7	Nickel Cyanide
	557-21-1	Zinc Cyanide
	592-01-8	Calcium Cyanide
	592-04-1	Mercuric Cyanide
	592-85-8	Mercuric Thiocyanate
592-87-0	Lead Thiocyanate	
1762-95-4	Ammonium Thiocyanate	

Diisocyanates Includes only the chemicals listed here.	91-93-0	3,3'-Dimethoxybenzidine-4,4' di-isocyanate
	91-97-4	3-3'-Dimethyl-4,4'-diphenylene diisocyanate

Ethylenebisdithiocarbamic acid, salts, esters Includes any unique chemical substance that contains an EBDC or an EBDC salt as part of that chemical's infrastructure. Includes, but is not limited to:	111-54-6	Ethylenebisdithiocarbamic acid, salts, esters
--	----------	---

Certain Glycol Ethers Please see guidance on page B-3 of this document.		
---	--	--

Lead Compounds Includes any unique chemical substance that contains lead as part of the chemical's infrastructure. Includes, but is not limited to:	301-04-2	Lead Acetate
	592-87-0	Lead Thiocyanate
	1072-35-1	Lead Stearate
	1314-87-0	Lead Sulfide
	1335-32-6	Lead Subacetate
	7428-48-0	Lead Stearate
	7446-27-7	Lead Phosphate
	7446-14-2	Lead Sulfate
	7645-25-2	Lead Arsenate
	7758-95-4	Lead Chloride
	7783-46-2	Lead Fluoride
	10099-74-8	Lead Nitrate
	10101-63-0	Lead Iodide
	10102-48-4	Lead Arsenate
	13814-96-5	Lead Fluoborate
15739-80-7	Lead Sulfate	
52652-59-2	Lead Stearate	
56189-09-4	Lead Stearate	

Chemical Category CAS No. Chemical Name

Manganese Compounds Includes any unique chemical substance that contains lead as part of the chemical's infrastructure. Includes, but is not limited to:	7722-64-7	Potassium Permanganate
	15339-36-3	Manganese, bis(dimethylcarbomodithiato-s-s)

Mercury Compounds Includes any unique chemical substance that contains mercury as part of the chemical's infrastructure. Includes, but is not limited to:	592-04-1	Mercuric Cyanide
	592-85-8	Mercuric Thiocyanate
	628-86-4	Mercury Fulminate
	7782-86-7	Mercurous Nitrate
	7783-35-9	Mercuric sulfate
	10415-75-5	Mercurous Nitrate

	189-64-0	Benzo(a,h)pyrene
	191-30-0	Dibenzo(a,l)pyrene
	192-65-4	Dibenzo(a,e)pyrene
	193-39-5	Indeno[1,2,3-cd]pyrene
	194-59-2	7H-Dibenzo(c,g)carbazole
	205-99-2	Benzo(b)fluoranthene
	205-82-3	Benzo(j)fluoranthene
	206-44-0	Benzo(j,k)fluorene
	207-08-9	Benzo(k)fluoranthene
	218-01-9	Benzo(a)phenanthrene
	224-42-0	Dibenz(a,j)acridine
	226-36-8	Dibenz(a,h)acridine
	3697-24-3	5-Methylchrysene
	5385-75-1	Dibenzo(a,e)Fluoranthene
	5522-43-0	1-Nitropyrene

Selenium Compounds Includes any unique chemical substance that contains selenium as part of the chemical's infrastructure. Includes, but is not limited to:		Carbamodithioic Acid, dimethyl-, Tetraanhydrosulfid with Orthothioselenious Acid
	144-34-3	
	630-10-4	Selenourea
	7446-08-4	Selenium Dioxide
	7488-56-4	Selenium sulfide
	7782-82-3	Sodium Selenite
	7783-00-8	Selenious Acid
	10102-18-8	Sodium Selenite
	12039-52-0	Selenious Acid, Dithallium (1+) Salt

Silver Compounds Includes any unique chemical substance that contains silver as part of the chemical's infrastructure. Includes, but is not limited to:	506-61-6	Potassium Silver Cyanide
	506-64-9	Silver Cyanide
	7761-88-8	Silver Nitrate

Strychnine and Salts Includes any unique chemical substance that contains strychnine or a strychnine salt as part of the chemical's infrastructure. Includes, but is not limited to:	57-24-9	Strychnine and Salts
--	---------	----------------------



Chemical List

2 0 0 2

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2002

Sorted Alphabetically by Name

CAS	NAME	C	313	ADD
1341-49-7	Ammonium bifluoride	C		1992
10192-30-0	Ammonium bisulfite	C		1993
1111-78-0	Ammonium carbamate	C		1992
506-87-6	Ammonium carbonate	C		1992
12125-02-9	Ammonium chloride	C		1993
7788-98-9	Ammonium chromate	C	*	1993
3012-65-5	Ammonium citrate, dibasic	C		1992
13826-83-0	Ammonium fluoborate	C		1993
12125-01-8	Ammonium fluoride	C		1993
1336-21-6	Ammonium hydroxide	C		1992
5972-73-6	Ammonium oxalate	C		1992
6009-70-7	Ammonium oxalate	C		1992
14258-49-2	Ammonium oxalate	C		1993
131-74-8	Ammonium picrate	C		1991
16919-19-0	Ammonium silicofluoride	C		1993
7773-06-0	Ammonium sulfamate	C		1993
12135-76-1	Ammonium sulfide	C		1993
10196-04-0	Ammonium sulfite	C		1993
3164-29-2	Ammonium tartrate	C		1992
14307-43-8	Ammonium tartrate	C		1993
1762-95-4	Ammonium thiocyanate	C	*	1992
7803-55-6	Ammonium vanadate	C		1993
628-63-7	Amyl acetate	C		1992
101-05-3	Anilazine		313	1995
62-53-3	Aniline	C	313	1990
120-12-7	Anthracene	C	313	1990
7440-36-0	Antimony	C	313	1990
1000	Antimony Compounds	C	N01 0	

CAS	NAME	C	313	ADD
7647-18-9	Antimony pentachloride	C	*	1992
28300-74-5	Antimony potassium tartrate	C	*	1992
7789-61-9	Antimony tribromide	C	*	1992
10025-91-9	Antimony trichloride	C	*	1992
7783-56-4	Antimony trifluoride	C	*	1992
1309-64-4	Antimony trioxide	C	*	1992
86-88-4	Antu	C		1991
12674-11-2	Aroclor 1016	C		1992
11104-28-2	Aroclor 1221	C		1992
11141-16-5	Aroclor 1232	C		1992
53469-21-9	Aroclor 1242	C		1992
12672-29-6	Aroclor 1248	C		1992
11097-69-1	Aroclor 1254	C		1992
11096-82-5	Aroclor 1260	C		1992
7440-38-2	Arsenic	C	313	1990
1327-52-2	Arsenic acid	C	*	1992
7778-39-4	Arsenic acid	C	*	1992
1001	Arsenic Compounds	C	N02 0	
1303-32-8	Arsenic disulfide	C	*	1992
1303-28-2	Arsenic pentoxide	C	*	1992
1327-53-3	Arsenic trioxide	C	*	1992
1303-33-9	Arsenic trisulfide	C	*	1992
1327-53-3	Arsenous oxide	C		1992
7784-34-1	Arsenous trichloride	C	*	1992
1332-21-4	Asbestos (friable)	C	313	1990
1912-24-9	Atrazine		313	1992
492-80-8	Auramine	C	X	1990
71751-41-2	Avermectin B1		X	1992

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym,* : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2002

Sorted Alphabetically by Name

CAS	NAME	C	313	ADD
7787-47-5	Beryllium chloride	C	*	1993
1003	Beryllium Compounds	C	N050	
7787-49-7	Beryllium fluoride	C	*	1993
7787-55-5	Beryllium nitrate	C	*	1993
13597-99-4	Beryllium nitrate	C	*	1993
33213-65-9	beta - Endosulfan	C		1993
319-85-7	beta-BHC	C		1992
91-59-8	beta-Naphthylamine	C	313	1990
57-57-8	beta-Propiolactone	C	313	1990
82657-04-3	Bifenthrin		313	1995
1464-53-5	2,2'-Bioxirane	C	X	1990
92-52-4	Biphenyl	C	313	1990
108-60-1	Bis(2-chloro-1-methylethyl)ether	C	313	1990
111-91-1	Bis(2-chloroethoxy) methane	C	313	1991
111-44-4	Bis(2-chloroethyl) ether	C	313	1990
117-81-7	Bis(2-ethylhexyl)phthalate	C	X	1990
542-88-1	Bis(chloromethyl) ether	C	313	1990
97-74-5	Bis(dimethylthiocarbamoyl) sulfide (tetramethylthiurammonosulfide)	C		
38661-72-2	1,3-Bis(methylisocyanate)cyclohexane		313*	1995
10347-54-3	1,4-Bis(methylisocyanate)cyclohexane		313*	1995
56-35-9	Bis(tributyltin) oxide		313	1995
10294-34-5	Borane, trichloro-		X	1995
7637-07-2	Borane, trifluoro-		X	1995
10294-34-5	Boron trichloride		313	1995
7637-07-2	Boron trifluoride		313	1995
314-40-9	Bromacil		313	1995
53404-19-6	Bromacil, lithium salt		313	1995
7726-95-6	Bromine		313	1995

CAS	NAME	C	313	ADD
598-31-2	Bromoacetone	C		1992
35691-65-7	1-Bromo-1-(bromomethyl)-1,3-propanedicarbonitrile		313	1995
353-59-3	Bromochlorodifluoromethane		313	1992
75-25-2	Bromoform	C	313	1990
74-83-9	Bromomethane	C	313	1990
314-40-9	5-Bromo-6-methyl-3-(1-methylpropyl)-2,4-(1H,3H)-pyrimidinedione		X	1995
101-55-3	4-Bromophenyl phenyl ether	C		1991
75-63-8	Bromotrifluoromethane		313	1991
1689-84-5	Bromoxynil		313	1995
1689-99-2	Bromoxynil octanoate			313
52-51-7	Bronopol			X
357-57-3	Brucine	C	313	1992
106-99-0	1,3-Butadiene		C	313
78-79-5	1,3-Butadiene, 2-methyl-	C		1991
4170-30-3	2-Butenal	C	X	
123-73-9	2-Butenal, (e)-	C		1991
764-41-0	2-Butene, 1,4-dichloro-	C	X	1992
123-86-4	Butyl acetate	C		1991
141-32-2	Butyl acrylate		313	1990
85-68-7	Butyl benzyl phthalate	C		1990
109-73-9	Butylamine	C		1991
106-88-7	1,2-Butylene oxide	C	313	1990
1114-71-2	Butylethylcarbamothioic acid S-propyl ester		X	1991
123-72-8	Butyraldehyde		313	1990
107-92-6	Butyric acid	C		1991
4680-78-8	C.I. Acid Green 3		313	1990
6459-94-5	C.I. Acid Red 114		313	1991

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym, * : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2002

Sorted Alphabetically by Name

CAS	NAME	C	313	ADD
148-18-5	Carbamodithioic acid, diethyl-,sodium salt (sodium diethyldithiocarbamate)	C		
144-34-3	Carbamodithioic acid, dimethyl-, tetraanhydrosulfid with orthothioselenious acid(selenium, tetrakis(dimethyldithiocarbamate))	C	*	
2303-16-4	Carbamothioic acid, bis(1-methylethyl)-S-(2,3-dichloro-2-propenyl)ester	C	X	
2008-41-5	Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester (butylate)	C		
52888-80-9	Carbamothioic acid, dipropyl-, S-(phenylmethyl) ester (prosulfocarb)	C		
1929-77-7	Carbamothioic acid, dipropyl-, S-propyl ester (vemolate)	C		
63-25-2	Carbaryl	C	313	1990
1563-66-2	Carbofuran	C	313	1992
52888-80-9	Carbomothioic acid, dipropyl-, S-(phenylmethyl) ester (prosulfocarb)	C		
75-15-0	Carbon disulfide	C	313	1990
463-58-1	Carbon oxide sulfide (COS)	C	X	1990
56-23-5	Carbon tetrachloride	C	313	1990
75-44-5	Carbonic dichloride	C	X	1990
353-50-4	Carbonic difluoride	C		1992
79-22-1	Carbonochloridic acid, methylester	C	X	1991
463-58-1	Carbonyl sulfide	C	313	1990
5234-68-4	Carboxin		313	1995
120-80-9	Catechol	C	313	1990
75-69-4	CFC-11	C	X	1991
76-14-2	CFC-114		X	1991
76-15-3	CFC-115		X	1991
75-71-8	CFC-12	C	X	1991

CAS	NAME	C	313	ADD
75-72-9	CFC-13		X	1991
2439-01-2	Chinomethionat		313	1991
133-90-4	Chloramben	C	313	1991
305-03-3	Chlorambucil	C		1991
57-74-9	Chlordane	C	313	1991
1005	Chlordane (Technical Mixture and Metabolites)	C		
115-28-6	Chlorendic acid		313	1991
90982-32-4	Chlorimuron ethyl		313	1991
1006	Chlorinated Benzenes	C		
1007	Chlorinated Ethanes	C		
1008	Chlorinated Naphthalene	C		
1009	Chlophenols	C	N08 4	
7782-50-5	Chlorine	C	313	1991
10049-04-4	Chlorine dioxide		313	1991
10049-04-4	Chlorine oxide (ClO2)		X	1991
494-03-1	Chloronaphazine	C		1991
107-20-0	Chloroacetaldehyde	C		1991
79-11-8	Chloroacetic acid	C	313	1991
532-27-4	2-Chloroacetophenone	C	313	1991
1011	Chloroalkyl Ethers	C		
4080-31-3	1-(3-Chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride		313	1991
51630-58-1	4-Chloro-alpha-(1-methylethyl)benzeneacetic acid cyano(3-phenoxyphenyl)methyl ester		X	1991
108-90-7	Chlorobenzene	C	313	1991
510-15-6	Chlorobenzilate	C	313	1991
66441-23-4	2-(4-((6-Chloro-2-benzoxazolyl)oxy)phenoxy)propanoic		X	1991

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym,* : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2002
Sorted Alphabetically by Name

CAS	NAME	C	313	ADD
11115-74-5	Chromic acid	C	*	1993
10101-53-8	Chromic sulfate	C	*	1993
7440-47-3	Chromium	C	313	1990
1012	Chromium Compounds	C	N09 0	
10049-05-5	Chromous chloride	C	*	1993
218-01-9	Chrysene	C	X*	1992
7440-48-4	Cobalt		313	1990
1013	Cobalt Compounds	C	N09 6	
7789-43-7	Cobaltous bromide	C	*	1993
544-18-3	Cobaltous formate	C	*	1992
14017-41-5	Cobaltous sulfamate	C	*	1993
1014	Coke Oven Emissions	C		
7440-50-8	Copper – reportable to EPA ONLY		313	1990
1015	Copper Compounds	C	N10 0	
544-92-3	Copper cyanide	C	*	1992
137-29-1	Copper, bis(dimethylcarbamodithioato-S-S)-(copper dimethyldithiocarbamate)	C	*	
56-72-4	Coumaphos	C		1991
8001-58-9	Creosote	C	313	1990
1319-77-3	Cresol (mixed isomers)	C	313	1990
4170-30-3	Crotonaldehyde	C	313	1992
123-73-9	Crotonaldehyde, (E)-	C		1991
98-82-8	Cumene	C	313	1990
80-15-9	Cumene hydroperoxide	C	313	1990
135-20-6	Cupferron		313	1990
142-71-2	Cupric acetate	C		1991
12002-03-8	Cupric acetoarsenite	C		1993

CAS	NAME	C	313	ADD
7447-39-4	Cupric chloride	C		1992
3251-23-8	Cupric nitrate	C	*	1992
5893-66-3	Cupric oxalate	C	*	1992
7758-98-7	Cupric sulfate	C	*	1992
10380-29-7	Cupric sulfate, ammoniated	C	*	1992
815-82-7	Cupric tartrate	C	*	1992
21725-46-2	Cyanazine		313	1992
1016	Cyanide Compounds	C	N10 6	
57-12-5	Cyanides (soluble salts and complexes)	C	*	1992
460-19-5	Cyanogen	C	*	1992
506-68-3	Cyanogen bromide	C	*	1992
506-77-4	Cyanogen chloride	C	*	1992
506-77-4	Cyanogen chloride ((CN)Cl)	C	*	1992
1134-23-2	Cycloate		313	1992
68-76-8	2,5-Cyclohexadiene-1,4-dione, 2,3,5-tris(1-aziridinyl)-		X	1992
110-82-7	Cyclohexane	C	313	1992
2556-36-7	1,4-Cyclohexane diisocyanate		313*	1992
58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-(1.alpha.,2.alpha.,3.beta.,4.alpha.,5.alpha.,6.beta.)-	C	X	1992
108-93-0	Cyclohexanol		313	1992
108-94-1	Cyclohexanone	C		1992
131-89-5	2-Cyclohexyl-4,6-dinitrophenol	C		1992
50-18-0	Cyclophosphamide	C		1992
68359-37-5	Cyfluthrin		313	1992
68085-85-8	Cyhalothrin		313	1992
94-75-7	2,4-D	C	313	1992
20830-81-3	Daunomycin	C		1992

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym,* : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2002
Sorted Alphabetically by Name

CAS	NAME	C	313	ADD
84-74-2	Dibutyl phthalate	C	313	1990
1918-00-9	Dicamba	C	313	1992
1194-65-6	Dichlobenil	C		1992
117-80-6	Dichlone	C		1991
99-30-9	Dichloran		313	1995
52645-53-1	3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropane carboxylic acid, (3-phenoxy-phenyl)methyl ester		X	1995
68359-37-5	3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, cyano(4-fluoro-3-phenoxyphenyl)methyl ester		X	
25321-22-6	Dichlorobenzene	C	X	1990
25321-22-6	Dichlorobenzene (mixed isomers)	C	313	1990
95-50-1	1,2-Dichlorobenzene	C	313	1990
541-73-1	1,3-Dichlorobenzene	C	313	1990
106-46-7	1,4-Dichlorobenzene	C	313	1990
1018	Dichlorobenzidine	C		
91-94-1	3,3'-Dichlorobenzidine	C	313	1990
612-83-9	3,3'-Dichlorobenzidine dihydrochloride		313	1995
64969-34-2	3,3'-Dichlorobenzidine sulfate		313	1995
75-27-4	Dichlorobromomethane	C	313	1990
764-41-0	1,4-Dichloro-2-butene	C	313	1992
1717-00-6	1,1-Dichloro-1-fluoroethane		313	
1649-08-7	1,2-Dichloro-1,1-difluoroethane		313	1995
75-71-8	Dichlorodifluoromethane	C	313	1991
75-34-3	1,1-Dichloroethane	C	X	1991
107-06-2	1,2-Dichloroethane	C	313	1990
75-35-4	1,1-Dichloroethylene	C	X	1990
156-60-5	1,2-Dichloroethylene	C		1991

CAS	NAME	C	313	ADD
540-59-0	1,2-Dichloroethylene		313	1990
111-44-4	Dichloroethyl ether	C	X	1990
75-43-4	Dichlorofluoromethane		313	
108-60-1	Dichloroisopropyl ether	C	X	1990
75-09-2	Dichloromethane	C	313	1990
1918-00-9	3,6-Dichloro-2-methoxybenzoic acid	C	X	1990
1982-69-0	3,6-Dichloro-2-methoxybenzoic acid, sodium salt		X	1990
542-88-1	Dichloromethyl ether	C	X	1990
19666-30-9	3-(2,4-Dichloro-5-(1-methylethoxy)phenyl)-5-(1,1-dimethylethyl)-1,3,4-oxadiazol-2(3H)-one		X	1990
101-05-3	4,6-Dichloro-N-(2-chlorophenyl)-1,3,5-triazin-2-amine		X	1990
99-30-9	2,6-Dichloro-4-nitroaniline		X	1990
422-56-0	3,3-Dichloro-1,1,1,2,2-pentafluoropropane		313	1990
507-55-1	1,3-Dichloro-1,1,2,2,3-pentafluoropropane		313	1990
136013-79-1	1,3-Dichloro-1,1,2,3,3-pentafluoropropane		313	1990
422-48-0	2,3-Dichloro-1,1,1,2,3-pentafluoropropane		313	1990
120-83-2	2,4-Dichlorophenol	C	313	1990
50471-44-8	3-(3,5-Dichlorophenyl)-5-ethenyl-5-methyl-2,4-oxazolidinedione		X	1990
35554-44-0	1-(2-(2,4-Dichlorophenyl)-2-(2-propenyloxy)ethyl)-1H-imidazole		X	1990
75-99-0	2,2-Dichloropropionic acid	C		1990
60207-90-1	1-(2-(2,4-Dichlorophenyl)-4-propyl-1,3-dioxolan-2-yl)-methyl-1H-1,2,4-triazole		X	1990
127564-92-5	Dichloropentafluoropropane		313	1990
13474-88-9	1,1-Dichloro-1,2,2,3,3-pentafluoropropane		313	1990
111512-56-2	1,1-Dichloro-1,2,3,3,3-pentafluoropropane		313	1990
422-44-6	1,2-Dichloro-1,1,2,3,3-pentafluoropropane		313	1990

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym,* : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2002

Sorted Alphabetically by Name

CAS	NAME	C	313	ADD
20325-40-0	3,3'-Dimethoxybenzidine dihydrochloride		313	1995
111984-09-9	3,3'-Dimethoxybenzidine hydrochloride		313	1995
91-93-0	3,3'-Dimethoxybenzidine-4,4'-diisocyanate		313*	1995
2300-66-5	Dimethylamine dicamba		313	1995
124-40-3	Dimethylamine	C	313	1991
60-11-7	4-Dimethylaminoazobenzene	C	313	1990
60-11-7	Dimethylaminoazobenzene	C	X	1990
57-97-6	7,12-Dimethylbenz[a]anthracene	C	313*	1991
119-93-7	3,3'-Dimethylbenzidine	C	313	1990
612-82-8	3,3'-Dimethylbenzidine dihydrochloride		313	1995
41766-75-0	3,3'-Dimethylbenzidine dihydrofluoride		313	1995
22781-23-3	2,2-Dimethyl-1,3-benzodioxol-4-ol methylcarbamate		X	1995
79-44-7	Dimethylcarbonyl chloride	C	313	1990
2524-03-0	Dimethyl chlorothiophosphate		313	1995
91-97-4	3,3'-Dimethyl-4,4'-diphenylene diisocyanate		313*	1995
139-25-3	3,3'-Dimethyldiphenylmethane-4,4'-diisocyanate		313*	1995
68-12-2	Dimethylformamide	C	X	1995
57-14-7	Dimethylhydrazine	C	X	1990
57-14-7	1,1-Dimethyl hydrazine	C	313	1990
7696-12-0	2,2-Dimethyl-3-(2-methyl-1-propenyl)cyclopropanecarboxylic acid (1,3,4,5,6,7-hexahydro-1,3-dioxo-2H-isoindol-2-yl)methyl ester	X	1995	
26002-80-2	2,2-Dimethyl-3-(2-methyl-1-propenyl)cyclopropanecarboxylic acid (3-phenoxyphenyl)methyl ester		X	1995
105-67-9	2,4-Dimethylphenol	C	313	1990
2524-03-0	Dimethyl phosphorochloridothioate		X	1995
131-11-3	Dimethyl phthalate	C	313	1990

CAS	NAME	C	313	ADD
77-78-1	Dimethyl sulfate	C	313	1991
25154-54-5	Dinitrobenzene (mixed isomers)	C		1991
88-85-7	Dinitrobutyl phenol	C	313	1991
534-52-1	Dinitrocresol	C	X	1991
329-71-5	2,5-Dinitrophenol	C		1991
573-56-8	2,6-Dinitrophenol	C		1991
606-20-2	2,6-Dinitrotoluene	C	313	1991
534-52-1	4,6-Dinitro-o-cresol	C	313	1991
534-52-1	4,6-Dinitro-o-cresol and salts	C		1991
25550-58-7	Dinitrophenol	C		1991
51-28-5	2,4-Dinitrophenol	C	313	1991
121-14-2	2,4-Dinitrotoluene	C	313	1991
610-39-9	3,4-Dinitrotoluene	C		1991
25321-14-6	Dinitrotoluene (mixed isomers)	C	313	1991
117-84-0	Di-n-octyl phthalate	C		1991
39300-45-3	Dinocap		313	1991
88-85-7	Dinoseb	C	X	1991
621-64-7	Di-n-propylnitrosamine	C	X	1991
123-91-1	1,4-Dioxane	C	313	1991
1060	Dioxin and Dioxin like Compounds		313	
957-51-7	Diphenamid		313	
122-39-4	Diphenylamine		313	1991
1019	Diphenylhydrazine	C		
122-66-7	1,2-Diphenylhydrazine	C	313	1991
152-16-9	Diphosphoramidate, octamethyl-	C		1991
2164-07-0	Dipotassium endothall		313	1991
136-45-8	Dipropyl isocinchomerate		313	1991
142-84-7	Dipropylamine	C		1991
19044-88-3	4-(Dipropylamino)-3,5-		X	1991

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym, * : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2002

Sorted Alphabetically by Name

CAS	NAME	C	313	ADD
	methylethylamino]phosphinothioyl]oxy) benzoic acid 1-methylethyl ester			
141-78-6	Ethyl acetate	C		1991
140-88-5	Ethyl acrylate	C	313	1990
31218-83-4	3-(((Ethylamino)methoxyphosphinothioyl)oxy)-2-butenoic acid, 1-methylethyl ester		X	1995
100-41-4	Ethylbenzene	C	313	1990
51-79-6	Ethyl carbamate	C	X	1990
75-00-3	Ethyl chloride	C	X	1990
541-41-3	Ethyl chloroformate		313	1990
90982-32-4	Ethyl-2-(((4-chloro-6-methoxyprimidin-2-yl)-carbonyl)-amino)sulfonyl)benzoate		X	1995
107-12-0	Ethyl cyanide	C		1991
759-94-4	Ethyl dipropylthiocarbamate		313	1995
74-85-1	Ethylene		313	1990
111-54-6	Ethylenebisdithiocarbamic acid, salts & esters	C	X*	1991
111-54-6	Ethylenebisdithiocarbamic acid, salts and esters		N17 1	
107-15-3	Ethylenediamine	C		1991
60-00-4	Ethylenediamine-tetraacetic acid (EDTA)	C		1991
106-93-4	Ethylene dibromide	C	X	1990
107-06-2	Ethylene dichloride	C	X	1990
107-21-1	Ethylene glycol	C	313	1990
75-21-8	Ethylene oxide	C	313	1990
96-45-7	Ethylene thiourea	C	313	1990
60-29-7	Ethyl ether	C		1991
97-63-2	Ethyl methacrylate	C		1991
62-50-0	Ethyl methanesulfonate	C		1991
151-56-4	Ethyleneimine	C	313	1990

CAS	NAME	C	313	ADD
75-34-3	Ethylidene Dichloride	C	313	1991
52-85-7	Famphur	C	313	1991
60168-88-9	Fenarimol		313	1991
13356-08-6	Fenbutatin oxide		313	1991
66441-23-4	Fenoxaprop ethyl		313	1991
72490-01-8	Fenoxycarb		313	1991
39515-41-8	Fenpropathrin		313	1991
55-38-9	Fenthion		313	1991
51630-58-1	Fenvalerate		313	1991
14484-64-1	Ferbam		313	1991
1185-57-5	Ferric ammonium citrate	C		1991
2944-67-4	Ferric ammonium oxalate	C		1991
55488-87-4	Ferric ammonium oxalate	C		1991
7705-08-0	Ferric chloride	C		1991
7783-50-8	Ferric fluoride	C		1991
10421-48-4	Ferric nitrate	C	*	1991
10028-22-5	Ferric sulfate	C		1991
10045-89-3	Ferrous ammonium sulfate	C		1991
7758-94-3	Ferrous chloride	C		1991
7720-78-7	Ferrous sulfate	C	*	1991
7782-63-0	Ferrous sulfate	C		1991
	Fine mineral fibers	C		
	Fine mineral fibers (c)	C		
69806-50-4	Fluazifop butyl		313	1991
2164-17-2	Fluometuron		313	1991
206-44-0	Fluoranthene	C	*	1991
86-73-7	Fluorene	C		1991
7782-41-4	Fluorine	C	313	1991
640-19-7	Fluoroacetamide	C		1991

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym, * : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2002

Sorted Alphabetically by Name

CAS	NAME	C	313	ADD
	Hexachlorocyclohexane (all isomers) CAS 608-73-1	C		
58-89-9	Hexachlorocyclohexane (gamma isomer)	C	X	1990
77-47-4	Hexachlorocyclopentadiene	C	313	1990
67-72-1	Hexachloroethane	C	313	1990
1335-87-1	Hexachloronaphthalene		313	1990
70-30-4	Hexachlorophene	C	313	1991
1888-71-7	Hexachloropropene	C		1992
757-58-4	Hexaethyl tetraphosphate	C		1992
13356-08-6	Hexakis(2-methyl-2-phenylpropyl)distanoxane		X	1995
822-06-0	Hexamethylene-1,6-diisocyanate	C	313*	1995
680-31-9	Hexamethylphosphoramide	C	313	1990
110-54-3	Hexane	C	X	1995
51235-04-2	Hexazinone		313	1995
53404-19-6	2,4-(1H,3H)-Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylpropyl), lithium salt		X	1995
133-06-2	1H-Isoindole-1,3(2H)-dione, 3a,4,7,7a-tetrahydro-2-[(trichloromethyl)thio]-	C	X	1990
67485-29-4	Hydramethylinon		313	1995
302-01-2	Hydrazine	C	313	1990
10034-93-2	Hydrazine sulfate		313	1990
57-14-7	Hydrazine, 1,1-dimethyl-	C	X	1990
1615-80-1	Hydrazine, 1,2-diethyl-	C		1992
540-73-8	Hydrazine, 1,2-dimethyl-	C		1992
122-66-7	Hydrazine, 1,2-diphenyl-	C	X	1990
60-34-4	Hydrazine, methyl-	C	X	1990
122-66-7	Hydrazobenzene	C	X	1990
7647-01-0	Hydrochloric acid	C		1990
74-90-8	Hydrocyanic acid	C	X	1990

CAS	NAME	C	313	ADD
7664-39-3	Hydrofluoric acid	C	X	1990
7664-39-3	Hydrofluoric acid (conc. 50% or greater)	C	X	1990
7647-01-0	Hydrogen chloride (anhydrous)	C	X	1990
7647-01-0	Hydrogen chloride (gas only)	C	X	1990
74-90-8	Hydrogen cyanide	C	313	1990
7664-39-3	Hydrogen fluoride	C	313	1990
7664-39-3	Hydrogen fluoride (anhydrous)	C	X	1990
7783-06-4	Hydrogen sulfide	C	313	1990
80-15-9	Hydroperoxide, 1-methyl-1-phenylethyl-	C	X	1990
123-31-9	Hydroquinone (manufactured only)	C	313	1990
35554-44-0	Imazalil		313	1990
193-39-5	Indeno(1,2,3-cd)pyrene	C	313*	1990
13463-40-6	Iron carbonyl (Fe(CO) ₅), (TB-5-11)-		X	
13463-40-6	Iron, pentacarbonyl-		313	1990
123-92-2	iso-Amyl acetate	C		1990
110-19-0	iso-Butyl acetate	C		1990
78-83-1	Isobutyl alcohol	C		1990
78-81-9	iso-Butylamine	C		1990
78-84-2	Isobutyraldehyde		313	1990
79-31-2	iso-Butyric acid	C		1990
465-73-6	Isodrin	C	313	1990
25311-71-1	Isofenphos		313	1990
55-91-4	Isofluorophate	C		1990
78-59-1	Isophorone	C		1990
4098-71-9	Isophorone diisocyanate		313*	1990
78-79-5	Isoprene	C		1990
42504-46-1	Isopropanolamine dodecylbenzene sulfonate	C		1990
67-63-0	Isopropyl alcohol (mfg-strong acid process)		313	1990

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym, * : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2002
Sorted Alphabetically by Name

CAS	NAME	C	313	ADD
7782-86-7	Mercurous nitrate	C	*	1993
10415-75-5	Mercurous nitrate	C	*	1993
7439-97-6	Mercury	C	313	1990
1028	Mercury Compounds	C	N45 8	
628-86-4	Mercury fulminate	C	*	1992
150-50-5	Merphos		313	1995
126-98-7	methacrylonitrile	C	313	1991
137-42-8	Metham sodium		313	1995
74-89-5	Methanamine	C		1991
75-50-3	Methanamine, N,N-dimethyl-	C		1991
124-40-3	Methanamine, N-methyl-	C	X	1991
62-75-9	Methanamine, N-methyl-N-nitroso-	C	X	1990
74-87-3	Methane, chloro-	C	X	1990
107-30-2	Methane, chloromethoxy-	C	X	1990
624-83-9	Methane, isocyanato-	C	X	
542-88-1	Methane, oxybis[chloro-	C	X	1990
509-14-8	Methane, tetranitro-	C		1992
67-66-3	Methane, trichloro-	C	X	1990
594-42-3	Methanesulfenyl chloride, trichloro-	C		1992
74-93-1	Methanethiol	C	X	1991
17702-57-7	Methanimidamide, N,N-dimethyl-N-[2-methyl-4- [[[(methylamino)carbonyl]oxy]phenol]- (Formparanate)	C		
23422-53-9	Methanimidamide, N,N-dimethyl-N-[3- [[[(methylamino)carbonyl]oxy]phenyl]- monohydrochloride (formetanate hydrochloride)	C		
67-56-1	Methanol	C	313	1990
57-74-9	4,7-Methanoindan, 1,2,3,4,5,6,7,8,8-	C	X	1990

CAS	NAME	C	313	ADD
	octachloro-2,3,3a,4,7,7a-hexahydro-			
91-80-5	Methapyrilene	C		199
20354-26-1	Methazole		313	199!
2032-65-7	Methiocarb	C	313	199!
16752-77-5	Methomyl	C		199!
94-74-6	Methoxone		313	199!
3653-48-3	Methoxone sodium salt		313	199!
72-43-5	Methoxychlor	C	313	199!
109-86-4	2-Methoxyethanol		313	199!
101200-48-0	2-(4-Methoxy-6-methyl-1,3,5-triazin-2-yl)- methylamino)carbonyl)amino)sulfonyl)-, methyl ester		X	199!
96-33-3	Methyl acrylate		313	199!
74-83-9	Methyl bromide	C	X	199!
56-49-5	3-Methylcholanthrene	C	*	199!
74-87-3	Methyl chloride	C	X	199!
79-22-1	Methyl chlorocarbonate	C	313	199!
71-55-6	Methyl chloroform	C	X	199!
79-22-1	methyl chloroformate	C	X	199!
3697-24-3	5-Methylchrysene		313*	199!
75790-84-0	4-Methyldiphenylmethane-3,4-diisocyanate		313*	199!
2439-01-2	6-Methyl-1,3-dithiolo[4,5-b]quinoxalin-2-one		X	199!
101-14-4	4,4'-Methylenebis(2-chloroaniline)	C	313	199!
97-23-4	2,2'-Methylenebis(4-chlorophenol)		X	199!
101-61-1	4,4'-Methylenebis(N,N- dimethyl)benzenamine		313	199!
101-77-9	4,4'-Methylenedianiline	C	313	199!
78-93-3	Methyl ethyl ketone	C	313	199!
78-93-3	Methyl ethyl ketone (MEK)	C	X	199!
1338-23-4	Methyl ethyl ketone peroxide	C		199!

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym,* : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2002
Sorted Alphabetically by Name

CAS	NAME	C	313	ADD
	(trifluoromethyl) benzenamine			
117-84-0	n-Diethylphthalate	C		1990
834-12-8	N-Ethyl-N'-(1-methylethyl)-6-(methylthio)-1,3,5-triazine-2,4-diamine		X	1995
110-54-3	n-Hexane	C	313	1995
7440-02-0	Nickel	C	313	1990
15699-18-0	Nickel ammonium sulfate	C	*	1993
13463-39-3	Nickel carbonyl	C	*	1993
7718-54-9	Nickel chloride	C	*	1993
37211-05-5	Nickel chloride	C	*	1993
1029	Nickel Compounds	C	N49 5	
557-19-7	Nickel cyanide	C	*	1992
12054-48-7	Nickel hydroxide	C	*	1993
14216-75-2	Nickel nitrate	C	*	1993
7786-81-4	Nickel sulfate	C	*	1993
54-11-5	Nicotine	C	*	1991
1055	Nicotine and salts		N50 3	
1929-82-4	Nitrapyrin		313	1995
1090	Nitrate compounds (water dissociable)		N51 1	
7697-37-2	Nitric acid	C	313	1990
7697-37-2	Nitric acid (conc 80% or greater)	C	X	1990
10102-43-9	Nitric oxide	C		1993
139-13-9	Nitrilotriacetic acid		313	1990
98-95-3	Nitrobenzene	C	313	1990
92-93-3	4-Nitrobiphenyl	C	313	1990
1836-75-5	Nitrofen		313	1990
10102-44-0	Nitrogen dioxide	C		1993

CAS	NAME	C	313	ADD
10544-72-6	Nitrogen dioxide	C		1990
51-75-2	Nitrogen mustard		313	1990
10102-43-9	Nitrogen oxide (NO)	C		1993
55-63-0	Nitroglycerin	C	313	1990
25154-55-6	Nitrophenol (mixed isomers)	C		1990
1030	Nitrophenols	C		
88-75-5	2-Nitrophenol	C	313	1990
79-46-9	2-Nitropropane	C	313	1990
5522-43-0	1-Nitropyrene		313*	1990
1031	Nitrosamines	C		
62-75-9	Nitrosodimethylamine	C	X	1990
1321-12-6	Nitrotoluene	C		1990
872-50-4	N-Methyl-2-pyrrolidone		313	1990
924-42-5	N-Methylolacrylamide		313	1990
99-59-2	5-Nitro-o-anisidine		313	1990
99-55-8	5-Nitro-o-toluidine	C	313	1990
100-02-7	4-Nitrophenol	C	313	1990
1116-54-7	N-Nitrosodiethanolamine	C		1990
55-18-5	N-Nitrosodiethylamine	C	313	1990
62-75-9	N-Nitrosodimethylamine	C	313	1990
924-16-3	N-Nitrosodi-n-butylamine	C	313	1990
621-64-7	N-Nitrosodi-n-propylamine	C	313	1990
86-30-6	N-Nitrosodiphenylamine	C	313	1990
4549-40-0	N-Nitrosomethylvinylamine	C	313	1990
59-89-2	N-Nitrosomorpholine	C	313	1990
759-73-9	N-Nitroso-N-ethylurea	C	313	1990
684-93-5	N-Nitroso-N-methylurea	C	313	1990
615-53-2	N-Nitroso-N-methylurethane	C		1990
16543-55-8	N-Nitrosornnicotine		313	1990

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym, * : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2002

Sorted Alphabetically by Name

CAS	NAME	C	313	ADD
95-69-2	p-Chloro-o-toluidine		313	1995
104-12-1	p-Chlorophenyl isocyanate		313	1995
82-68-8	PCNB	C	X	1990
120-71-8	p-Cresidine		313	1990
106-44-5	p-Cresol	C	313	1990
87-86-5	PCP	C	X	1990
100-25-4	p-Dinitrobenzene	C	313	1990
1114-71-2	Pebulate		313	1995
40487-42-1	Pendimethalin		313	1995
608-93-5	Pentachlorobenzene	C		1992
76-01-7	Pentachloroethane	C	313	1991
82-68-8	Pentachloronitrobenzene	C	X	1990
87-86-5	Pentachlorophenol	C	313	1990
504-60-9	1,3-Pentadiene	C		1992
1120-71-4	1,3-Propane sulfone	C	X	1990
57-33-0	Pentobarbital sodium		313	1995
79-21-0	Peracetic acid		313	1990
127-18-4	Perchloroethylene	C	X	1990
594-42-3	Perchloromethyl mercaptan	C	313	1992
52645-53-1	Permethrin		313	1995
62-44-2	Phenacetin	C		1991
85-01-8	Phenanthrene	C	313	1991
108-95-2	Phenol	C	313	1990
114-26-1	Phenol, 2-(1-methylethoxy)-, methylcarbamate	C	X	1990
64-00-6	Phenol, 3-(1-methylethyl)-, methyl carbamate (m-Cumenyl methylcarbamate)	C		
2631-37-0	Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamate (promecarb)	C		
26002-80-2	Phenothrin		313	1995

CAS	NAME	C	313	ADD
72490-01-8	(2-(4-Phenoxy-phenoxy)-ethyl)carbamic acid ethyl ester		X	1990
696-28-6	Phenyl dichloroarsine	C		1990
23564-06-9	(1,2-Phenylenebis(iminocarbonothioyl)) biscarbamic acid diethyl ester		X	1990
95-54-5	1,2-Phenylenediamine		313	1990
108-45-2	1,3-Phenylenediamine		313	1990
615-28-1	1,2-Phenylenediamine dihydrochloride		313	1990
624-18-0	1,4-Phenylenediamine dihydrochloride		313	1990
123-61-5	1,3-Phenylene diisocyanate		313*	1990
104-49-4	1,4-Phenylene diisocyanate		313*	1990
62-38-4	Phenylmercuric acetate	C		1990
62-38-4	Phenylmercury acetate	C		1990
10453-86-8	5-(Phenylmethyl)-3-furanyl)methyl 2,2-dimethyl-3-(2-methyl-1-propenyl)cyclopropanecarboxylate		X	1990
90-43-7	2-Phenylphenol		313	1990
103-85-5	Phenylthiourea	C		1990
57-41-0	Phenytoin		313	1990
298-02-2	Phorate	C		1990
75-44-5	Phosgene	C	313	1990
7803-51-2	Phosphine	C	313	1990
52-68-6	Phosphonic acid, (2,2,2-trichloro-1-hydroxyethyl)-, dimethyl ester	C	X	1990
7664-38-2	Phosphoric acid	C	313	1990
961-11-5	Phosphoric acid, 2-chloro-1-(2,3,5-trichlorophenyl) ethenyl dimethyl ester		X	1990
62-73-7	Phosphoric acid, 2-dichloroethenyl dimethyl ester	C	X	1990
13194-48-4	Phosphorodithioic acid O-ethyl S,S-dipropyl ester		X	1990

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym,* : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2002

Sorted Alphabetically by Name

CAS	NAME	C	313	ADD
115-07-1	1-Propene		X	1990
107-13-1	2-Propenenitrile	C	X	1990
126-98-7	2-Propenenitrile, 2-methyl-	C	X	1991
107-18-6	2-Propen-1-ol	C	X	1990
31218-83-4	Propetamphos		313	1995
60207-90-1	Propiconazole		313	1995
123-38-6	Propionaldehyde	C	313	1990
79-09-4	Propionic acid	C		1991
123-62-6	Propionic anhydride	C		1991
107-12-0	Propionitrile	C		1991
542-76-7	Propionitrile, 3-chloro-	C	X	1992
114-26-1	Propoxur	C	313	1990
115-07-1	Propylene		313	1990
75-56-9	Propylene oxide	C	313	1990
75-55-8	Propyleneimine	C	313	1990
106-49-0	p-Toluidine	C		1991
106-42-3	p-Xylene	C	313	1990
129-00-0	Pyrene	C		1991
121-21-1	Pyrethrins	C		1991
121-29-9	Pyrethrins	C		1991
8003-34-7	Pyrethrins	C		1993
110-86-1	Pyridine	C	313	1990
54-11-5	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-,(S)-	C		1991
504-24-5	Pyridine, 4-amino-	C		1992
57-47-6	Pyrrolo[2,3-b] indol-5-ol, 1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethyl-, methylcarbamate (ester), (3aS-cis)- (Physostigmine)	C		
91-22-5	Quinoline	C	313	1990
106-51-4	Quinone	C	313	1990

CAS	NAME	C	313	ADD
82-68-8	Quintozene	C	313	1990
76578-14-8	Quizalofop-ethyl		313	1990
50-55-5	Reserpine	C		1990
10453-86-8	Resmethrin		313	1990
108-46-3	Resorcinol	C		1990
301-12-2	S-(2-(Ethylsulfinyl)ethyl) O,O-dimethyl ester phosphorothioic acid		X	1990
78-48-8	S,S,S-Tributyltrithiophosphate		313	1990
81-07-2	Saccharin (manufacturing)	C	313	1990
81-07-2	Saccharin and salts	C		1990
94-59-7	Safrole	C	313	1990
626-38-0	sec-Amyl acetate	C		1990
105-46-4	sec-Butyl acetate	C		1990
78-92-2	sec-Butyl alcohol		313	1990
513-49-5	sec-Butylamine	C		1990
13952-84-6	sec-Butylamine	C		1990
7783-00-8	Selenious acid	C	*	1990
12039-52-0	Selenious acid, dithallium(1+) salt	C	*	1990
7782-49-2	Selenium	C	313	1990
1036	Selenium Compounds	C	N72 5	
7446-08-4	Selenium dioxide	C	*	1990
7488-56-4	Selenium sulfide	C	*	1990
630-10-4	Selenourea	C	*	1990
74051-80-2	Sethoxydim		313	1990
75-77-4	Silane, chlorotrimethyl-		X	1990
75-78-5	Silane, dichlorodimethyl-		X	1990
75-79-6	Silane, trichloromethyl-		X	1990
1095	Silica, crystalline (respirable, < 10 microns)			2002
7440-22-4	Silver – file to EPA ONLY		313	1990

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym, *: member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2002

Sorted Alphabetically by Name

CAS	NAME	C	313	ADD
6369-96-6	2,4,5-T amines	C		1992
6369-97-7	2,4,5-T amines	C		1992
34014-18-1	Tebuthiuron		313	1995
3383-96-8	Temephos		313	1995
107-49-3	Tepp	C		1991
5902-51-2	Terbacil		313	1995
625-16-1	tert-Amyl acetate	C		1992
540-88-5	tert-Butyl acetate	C		1992
75-65-0	tert-Butyl alcohol		313	1990
75-64-9	tert-Butylamine	C		1991
93-79-8	2,4,5-T esters	C		1991
1928-47-8	2,4,5-T esters	C		1992
2545-59-7	2,4,5-T esters	C		1992
25168-15-4	2,4,5-T esters	C		1993
61792-07-2	2,4,5-T esters	C		1993
79-94-7	Tetrabromobisphenol A		313	
95-94-3	1,2,4,5-Tetrachlorobenzene	C		1991
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	C		1992
630-20-6	1,1,1,2-Tetrachloroethane	C	313	1992
79-34-5	1,1,2,2-Tetrachloroethane	C	313	1990
127-18-4	Tetrachloroethylene	C	313	1990
354-14-3	1,1,2,2-Tetrachloro-1-fluoroethane		313	1995
354-11-0	1,1,1,2-Tetrachloro-2-fluoroethane		313	1995
58-90-2	2,3,4,6-Tetrachlorophenol	C	*	1991
961-11-5	Tetrachlorvinphos		313	1990
64-75-5	Tetracycline hydrochloride		313	1995
78-00-2	Tetraethyl lead	C		1991
107-49-3	Tetraethyl pyrophosphate	C		1991
3689-24-5	Tetraethyldithiopyrophosphate	C		1992

CAS	NAME	C	313	ADD
533-74-4	Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione		X	1992
53404-60-7	Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione, ion(1-), sodium		X	1992
67485-29-4	Tetrahydro-5,5-dimethyl-2(1H)-pyrimidinone(3-(4-(trifluoromethyl)phenyl)-1-(2-(4-(trifluoromethyl)phenyl)ethenyl)-2-propenylidene)hydrazone	X	1995	
7696-12-0	Tetramethrin		313	1992
39515-41-8	2,2,3,3-Tetramethylcyclopropane carboxylic acid cyano(3-phenoxyphenyl)methyl ester		X	1992
509-14-8	Tetranitromethane	C		1992
1314-32-5	Thallic oxide	C	*	1992
7440-28-0	Thallium	C	313	1990
7791-12-0	Thallium chloride TICl	C	*	1992
1038	Thallium Compounds	C	N760	
10031-59-1	Thallium sulfate	C	*	1992
563-68-8	Thallium(I) acetate	C	*	1992
6533-73-9	Thallium(I) carbonate	C	*	1992
10102-45-1	Thallium(I) nitrate	C	*	1992
7446-18-6	Thallium(I) sulfate	C	*	1992
6533-73-9	Thallos carbonate	C	*	1992
7791-12-0	Thallos chloride	C	*	1992
7446-18-6	Thallos sulfate	C	*	1992
148-79-8	Thiabendazole		313	1992
148-79-8	2-(4-Thiazoly)-1H-benzimidazole		X	1992
62-55-5	Thioacetamide	C	313	1990
28249-77-6	Thiobencarb		313	1992
139-65-1	4,4'-Thiodianiline		313	1992

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym, * : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2002

Sorted Alphabetically by Name

CAS	NAME	C	313	ADD
1582-09-8	Trifluralin	C	313	1990
26644-46-2	Triforine		313	1995
75-50-3	Trimethylamine	C		1991
95-63-6	1,2,4-Trimethylbenzene		313	1990
16938-22-0	2,2,4-Trimethylhexamethylene diisocyanate		313*	1995
15646-96-5	2,4,4-Trimethylhexamethylene diisocyanate		313*	1995
540-84-1	2,2,4-Trimethylpentane	C		
540-84-1	2,2,4-Trimethylpentane	C		
2655-15-4	2,3,5-Trimethylphenyl methylcarbamate		313	1995
99-35-4	1,3,5-Trinitrobenzene	C		1991
639-58-7	Triphenyltin chloride		313	1995
76-87-9	Triphenyltin hydroxide		313	1995
126-72-7	Tris(2,3-dibromopropyl) phosphate	C	313	1990
14484-64-1	Tris(dimethylcarbamodithioato-S,S')iron		X	1995
72-57-1	Trypan blue	C	313	1991
13560-99-1	2,4,5-T salts	C		1993
66-75-1	Uracil mustard	C		1991
541-09-3	Uranyl acetate	C		1992
10102-06-4	Uranyl nitrate	C	*	1993
36478-76-9	Uranyl nitrate	C	*	1993
2164-17-2	Urea, N,N-dimethyl-N'-[3-(trifluoromethyl)phenyl]-		X	
51-79-6	Urethane	C	313	1990
7440-62-2	Vanadium (except when in alloy)		313	1990
1314-62-1	Vanadium pentoxide	C		1992
1065	Vanadium Compounds		N77 0	
27774-13-6	Vanadyl sulfate	C		1993
2699-79-8	Vikane		X	1995
50471-44-8	Vinclozolin		313	1995

CAS	NAME	C	313	ADD
108-05-4	Vinyl acetate	C	313	1990
108-05-4	Vinyl acetate monomer	C	X	1990
593-60-2	Vinyl bromide	C	313	1990
75-01-4	Vinyl chloride	C	313	1990
75-35-4	Vinylidene chloride	C	313	1990
81-81-2	Warfarin	C	X*	1990
1075	Warfarin and salts		N87 4	
81-81-2	Warfarin, & salts, conc.>0.3%	C	X*	1990
1330-20-7	Xylene (mixed isomers)	C	313	1990
1300-71-6	Xylenol	C		1990
87-62-7	2,6-Xylidine		313	1990
7440-66-6	Zinc (fume or dust)	C	313	1990
557-34-6	Zinc acetate	C	*	1990
14639-97-5	Zinc ammonium chloride	C	*	1990
14639-98-6	Zinc ammonium chloride	C	*	1990
52628-25-8	Zinc ammonium chloride	C	*	1990
1332-07-6	Zinc borate	C	*	1990
7699-45-8	Zinc bromide	C	*	1990
3486-35-9	Zinc carbonate	C	*	1990
7646-85-7	Zinc chloride	C	*	1990
1039	Zinc Compounds	C	N98 2	
557-21-1	Zinc cyanide	C	*	1990
7783-49-5	Zinc fluoride	C	*	1990
557-41-5	Zinc formate	C	*	1990
7779-86-4	Zinc hydrosulfite	C	*	1990
7779-88-6	Zinc nitrate	C	*	1990
127-82-2	Zinc phenolsulfonate	C	*	1990
1314-84-7	Zinc phosphide	C		1990

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym, * : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2001

Sorted Numerically by CAS

CAS	NAME	C	313	ADD
1000	Antimony Compounds	C	N010	
1001	Arsenic Compounds	C	N020	
1002	Barium Compounds		N040	
1003	Beryllium Compounds	C	N050	
1004	Cadmium Compounds	C	N078	
1005	Chlordane (Technical Mixture and Metabolites)	C		
1006	Chlorinated Benzenes	C		
1007	Chlorinated Ethanes	C		
1008	Chlorinated Naphthalene	C		
1011	Chloroalkyl Ethers	C		
1009	Chlorophenols	C	N084	
1012	Chromium Compounds	C	N090	
1013	Cobalt Compounds	C	N096	
1014	Coke Oven Emissions	C		
1015	Copper Compounds	C	N100	
1016	Cyanide Compounds	C	N106	
1017	DDT and Metabolites	C		
1018	Dichlorobenzidine	C		
1019	Diphenylhydrazine	C		
1020	Endosulfan and Metabolites	C		
1021	Endrin and Metabolites	C		
	Fine mineral fibers	C		
	Fine mineral fibers (c)	C		
1022	Glycol Ethers	C	N230	
1023	Haloethers	C		
1024	Halomethanes	C		
	HCFC-141b	X		
1025	Heptachlor and Metabolites	C		
1026	Lead Compounds	C	N420	
1027	Manganese Compounds	C	N450	
1028	Mercury Compounds	C	N458	
1029	Nickel Compounds	C	N495	

CAS	NAME	C	313	ADD
1030	Nitrophenols	C		
1031	Nitrosamines	C		
1033	Phthalate Esters	C		
1034	Polybrominated Biphenyls (PBBs)			N575
1035	Polynuclear Aromatic Hydrocarbons	C		
1036	Selenium Compounds	C	N725	
1037	Silver Compounds	C	N740	
1038	Thallium Compounds	C	N760	
1039	Zinc Compounds	C	N982	
1040	Polycyclic aromatic compounds (includes only 21 chemicals)			N590
	Polycyclic organic matter	C		
	Polycyclic Organic Matter (e)	C		
1045	Polychlorinated alkanes (C10 to C13)			N583
1050	Diisocyanates (includes only 20 chemicals)			N120
1055	Nicotine and salts	C	N503	19
1060	Dioxin and Dioxin like Compounds			N150
1065	Vanadium Compounds			N770
1070	Strychnine, and salts	C	N746	19
1075	Warfarin and salts			N874
1090	Nitrate compounds (water dissociable)			N511
1095	Silica, crystalline (respirable, < 10 microns)			2C
6-60-7	Picloram			313 19
30-59-3	Tributyltin fluoride			313 19
50-00-0	Formaldehyde	C		313 19
50-00-0	Formaldehyde (solution)	C	X	
50-07-7	Mitomycin C	C		19
50-18-0	Cyclophosphamide	C		19
50-29-3	DDT	C		
50-32-8	Benzo[a]pyrene	C	313*	19
50-55-5	Reserpine	C		19
51-03-6	Piperonyl butoxide			313 19
51-21-8	5-Fluorouracil		X	

CAS: Chemical Abstract Service Registry Number

313: EPCRA Reportable Chemical, X: EPCRA 313 Synonym,* : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY form R as well as a Form S must be completed and submitted to DEP with your TURA Reporting Package.

NOTE: Some EPA Chemicals may have been deslisted from the US EPA's EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2001

Sorted Numerically by CAS

CAS	NAME	C	313	ADD
60-29-7	Ethane, 1,1'-oxybis-	C		1991
60-29-7	Ethyl ether	C		1991
60-34-4	Hydrazine, methyl-	C	X	
60-34-4	Methyl hydrazine	C	313	1990
60-35-5	Acetamide	C	313	1990
60-51-5	Dimethoate	C	313	1991
60-57-1	Dieldrin	C		1991
61-82-5	Amitrole	C	313	1991
62-38-4	Phenylmercuric acetate	C		1991
62-38-4	Phenylmercury acetate	C		1991
62-44-2	Phenacetin	C		1991
62-50-0	Ethyl methanesulfonate	C		1991
62-53-3	Aniline	C	313	1990
62-55-5	Thioacetamide	C	313	1990
62-56-6	Thiourea	C	313	1990
62-73-7	Dichlorvos	C	313	1990
62-73-7	Phosphoric acid, 2-dichloroethenyl dimethyl ester	C	X	1990
62-74-8	Fluoroacetic acid, sodium salt	C	X	1991
62-74-8	Sodium fluoroacetate	C	313	1991
62-75-9	Methanamine, N-methyl-N-nitroso-	C	X	1990
62-75-9	Nitrosodimethylamine	C	X	1990
62-75-9	N-Nitrosodimethylamine	C	313	1990
63-25-2	1-Naphthalenol, methylcarbamate	C	X	1990
63-25-2	Carbaryl	C	313	1990
64-00-6	Phenol, 3-(1-methylethyl)-, methyl carbamate (m-Cumenyl methylcarbamate)	C		
64-18-6	Formic acid	C	313	1991
64-19-7	Acetic acid (concentrations of 12% or less are NOT reportable)	C		1991
64-67-5	Diethyl sulfate	C	313	1990
64-75-5	Tetracycline hydrochloride		313	1995

CAS	NAME	C	313	ADD
65-85-0	Benzoic acid	C		19
66-75-1	Uracil mustard	C		19
67-56-1	Methanol	C	313	19
67-63-0	Isopropyl alcohol (mfg-strong acid process)		313	19
67-64-1	Acetone	C		
67-66-3	Chloroform	C	313	19
67-66-3	Methane, trichloro-	C	X	19
67-72-1	Hexachloroethane	C	313	19
68-12-2	Dimethylformamide	C	X	
68-12-2	N,N-Dimethylformamide	C	313	19
68-76-8	2,5-Cyclohexadiene-1,4-dione, 2,3,5-tris(1-aziridinyl)-		X	19
68-76-8	Triaziquone		313	19
70-25-7	Guanidine, N-methyl-N'-nitro-N-nitroso-	C		19
70-30-4	Hexachlorophene	C	313	19
71-36-3	n-Butyl alcohol	C	313	19
71-43-2	Benzene	C		3
71-55-6	1,1,1-Trichloroethane	C		3
71-55-6	Methyl chloroform	C	X	19
72-20-8	Endrin	C		19
72-43-5	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis [4-methoxy-	C	X	19
72-43-5	Methoxychlor	C	313	19
72-54-8	DDD	C		19
72-55-9	DDE	C		19
72-57-1	Trypan blue	C	313	19
74-83-9	Bromomethane	C	313	19
74-83-9	Methyl bromide	C	X	19
74-85-1	Ethene		X	19
74-85-1	Ethylene		313	19
74-87-3	Chloromethane	C	313	19
74-87-3	Methane, chloro-	C	X	19

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym,* : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2001
Sorted Numerically by CAS

CAS	NAME	C	313	ADD
75-86-5	Acetone cyanohydrin	C	X	
75-87-6	Acetaldehyde, trichloro-	C		
75-88-7	2-Chloro-1,1,1-trifluoroethane		313	1995
75-88-7	HCFC-133a		X	1995
75-99-0	2,2-Dichloropropionic acid	C		1991
76-01-7	Pentachloroethane	C	313	1991
76-02-8	Trichloroacetyl chloride		313	1995
76-06-2	Chloropicrin		313	1995
76-13-1	Ethane, 1,1,2-trichloro-1,2,2,-trifluoro-		X	1990
76-13-1	Freon 113		313	1990
76-14-2	CFC-114		X	1991
76-14-2	Dichlorotetrafluoroethane		313	1991
76-15-3	CFC-115		X	
76-15-3	Monochloropentafluoroethane		313	1991
76-44-8	1,4,5,6,7,8,8-Heptachloro-3a,4,7,7a-tetrahydro-4,7-methano-1H-indene	C	X	1990
76-44-8	Heptachlor	C	313	1990
76-87-9	Triphenyltin hydroxide		313	1995
77-47-4	Hexachlorocyclopentadiene	C	313	1990
77-73-6	Dicyclopentadiene		313	1995
77-78-1	Dimethyl sulfate	C	313	1990
78-00-2	Tetraethyl lead	C		1991
78-48-8	DEF		X	
78-48-8	S,S,S-Tributyltrithiophosphate		313	1995
78-59-1	Isophorone	C		
78-79-5	1,3-Butadiene, 2-methyl-	C		1991
78-79-5	Isoprene	C		1991
78-81-9	iso-Butylamine	C		1991
78-83-1	Isobutyl alcohol	C		
78-84-2	Isobutyraldehyde		313	1990
78-87-5	1,2-Dichloropropane	C	313	1990
78-87-5	Propane 1,2-dichloro-	C	X	1990

CAS	NAME	C	313	ADD
78-88-6	2,3-Dichloropropene	C	313	19
78-92-2	sec-Butyl alcohol		313	19
78-93-3	Methyl ethyl ketone	C	313	
78-93-3	Methyl ethyl ketone (MEK)	C	X	19
78-99-9	1,1-Dichloropropane	C		19
79-00-5	1,1,2-Trichloroethane	C	313	19
79-01-6	Trichloroethylene	C	313	
79-06-1	Acrylamide	C	313	19
79-09-4	Propionic acid	C		19
79-10-7	Acrylic acid	C	313	19
79-11-8	Chloroacetic acid	C	313	19
79-19-6	Thiosemicarbazide	C	313	19
79-21-0	Ethaneperoxoic acid		X	19
79-21-0	Peracetic acid		313	19
79-22-1	Carbonochloridic acid, methylester	C	X	19
79-22-1	Methyl chlorocarbonate	C	313	19
79-22-1	methyl chloroformate	C	X	19
79-31-2	iso-Butyric acid	C		
79-34-5	1,1,2,2-Tetrachloroethane	C	313	
79-44-7	Dimethylcarbamyyl chloride	C	313	19
79-46-9	2-Nitropropane	C	313	19
79-94-7	Tetrabromobisphenol A			
80-05-7	4,4'-Isopropylidenediphenol		313	19
80-15-9	Cumene hydroperoxide	C	313	19
80-15-9	Hydroperoxide, 1-methyl-1-phenylethyl-	C	X	19
80-62-6	Methyl methacrylate	C	313	19
81-07-2	Saccharin (manufacturing)	C	313	19
81-07-2	Saccharin and salts	C		
81-81-2	Warfarin	C	X*	19
81-81-2	Warfarin, & salts, conc.>0.3%	C	N874	19
81-88-9	C.I. Food Red 15		313	19
82-28-0	1-Amino-2-methylantraquinone		313	19

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym, * : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2001
Sorted Numerically by CAS

CAS	NAME	C	313	ADD
94-79-1	2,4-D Esters	C		1991
94-80-4	2,4-D butyl ester	C	313	1991
94-80-4	2,4-D Esters	C	X	1991
94-82-6	2,4-DB		313	1995
95-06-7	Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester(sulfallate)	C		
95-47-6	Benzene, o-dimethyl-	C	X	1990
95-47-6	o-Xylene	C	313	1990
95-48-7	o-Cresol	C	313	1990
95-50-1	1,2-Dichlorobenzene	C	313	1990
95-50-1	o-Dichlorobenzene	C	X	1990
95-53-4	o-Toluidine	C	313	1990
95-54-5	1,2-Phenylenediamine		313	1995
95-57-8	2-Chlorophenol	C	*	1991
95-63-6	1,2,4-Trimethylbenzene		313	1990
95-69-2	p-Chloro-o-toluidine		313	1995
95-80-7	2,4-Diaminotoluene	C	313	1990
95-94-3	1,2,4,5-Tetrachlorobenzene	C		
95-95-4	2,4,5-Trichlorophenol	C	313	1990
96-09-3	Styrene oxide	C	313	
96-12-8	1,2-Dibromo-3-chloropropane	C	313	
96-12-8	DBCP	C	X	1990
96-18-4	1,2,3-Trichloropropane		313	1995
96-33-3	Methyl acrylate		313	1990
96-45-7	Ethylene thiourea	C	313	1990
97-23-4	2,2'-Methylenebis(4-chlorophenol)		X	1995
97-23-4	Dichlorophene		313	1995
97-56-3	C.I. Solvent Yellow 3		313	1990
97-63-2	Ethyl methacrylate	C		
97-74-5	Bis(dimethylthiocarbamoyl) sulfide (tetramethylthiurammonosulfide)	C		
97-77-8	Thioperoxydicarbonic diamide,tetraethyl	C		

CAS	NAME	C	313	ADD
	(Disulfiram)			
98-01-1	Furfural		C	
98-07-7	Benzoic trichloride	C	313	
98-07-7	Benzotrichloride	C	X	19
98-09-9	Benzenesulfonyl chloride	C		19
98-82-8	Cumene	C	313	19
98-86-2	Acetophenone	C	313	19
98-87-3	Benzal chloride	C	313	19
98-88-4	Benzoyl chloride	C	313	19
98-95-3	Nitrobenzene	C	313	19
99-08-1	m-Nitrotoluene	C		19
99-30-9	2,6-Dichloro-4-nitroaniline		X	19
99-30-9	Dichloran		313	19
99-35-4	1,3,5-Trinitrobenzene	C		19
99-55-8	5-Nitro-o-toluidine	C	313	19
99-59-2	5-Nitro-o-anisidine		313	19
99-65-0	m-Dinitrobenzene	C	313	
99-99-0	p-Nitrotoluene	C		19
100-01-6	p-Nitroaniline	C	313	19
100-02-7	4-Nitrophenol	C	313	19
100-02-7	p-Nitrophenol	C	X	
100-25-4	p-Dinitrobenzene	C	313	19
100-41-4	Ethylbenzene	C	313	19
100-42-5	Styrene	C	313	
100-44-7	Benzyl chloride	C	313	19
100-47-0	Benzonitrile	C		19
100-75-4	N-Nitrosopiperidine	C	313	19
101-05-3	4,6-Dichloro-N-(2-chlorophenyl)-1,3,5-triazin-2-amine		X	19
101-05-3	Anilazine		313	19
101-14-4	4,4'-Methylenebis(2-chloroaniline)	C	313	
101-14-4	MBOCA	C	X	19

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym,* : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2001

Sorted Numerically by CAS

CAS	NAME	C	313	ADD
108-39-4	m-Cresol	C	313	1990
108-45-2	1,3-Phenylenediamine		313	1995
108-46-3	Resorcinol	C		1991
108-60-1	Bis(2-chloro-1-methylethyl)ether	C	313	
108-60-1	Dichloroisopropyl ether	C	X	1990
108-88-3	Toluene	C	313	1990
108-90-7	Chlorobenzene	C	313	1990
108-93-0	Cyclohexanol		313	1995
108-94-1	Cyclohexanone	C		1991
108-95-2	Phenol	C	313	1990
108-98-5	Benzenethiol	C		1991
108-98-5	Thiophenol	C		1991
109-06-8	2-Methylpyridine	C	313	
109-06-8	2-Picoline	C	X	1991
109-73-9	Butylamine	C		1991
109-77-3	Malononitrile	C	313	1991
109-86-4	2-Methoxyethanol		313	1990
109-89-7	Diethylamine	C		1991
109-99-9	Furan, tetrahydro-	C		1991
110-00-9	Furan	C		1991
110-16-7	Maleic acid	C		
110-17-8	Fumaric acid	C		
110-19-0	iso-Butyl acetate	C		1991
110-54-3	Hexane	C	X	1995
110-54-3	n-Hexane	C	313	1995
110-57-6	trans-1,4-Dichloro-2-butene		313	1995
110-57-6	trans-1,4-Dichlorobutene		X	1995
110-75-8	2-Chloroethyl vinyl ether	C		1991
110-80-5	2-Ethoxyethanol	C	313	1990
110-80-5	Ethanol, 2-ethoxy-	C	X	1990
110-82-7	Cyclohexane	C	313	1990
110-86-1	Pyridine	C	313	1990

CAS	NAME	C	313	ADD
111-42-2	Diethanolamine	C	313	19
111-44-4	Bis(2-chloroethyl) ether	C	313	19
111-44-4	Dichloroethyl ether	C	X	19
111-54-6	Ethylenebisdithiocarbamic acid, salts & esters	C	N171	19
111-91-1	Bis(2-chloroethoxy) methane	C	313	19
114-26-1	Phenol, 2-(1-methylethoxy)-, methylcarbamate	C	X	19
114-26-1	Propoxur	C	313	
115-02-6	Azaserine	C		19
115-07-1	1-Propene		X	19
115-07-1	Propene		X	19
115-07-1	Propylene		313	19
115-28-6	Chlorendic acid		313	19
115-29-7	Endosulfan	C		19
115-32-2	Benzenemethanol, 4-chloro-.alpha.-4-chlorophenyl)-.alpha.-(trichloromethyl)-	C	X	19
115-32-2	Dicofol	C	313	19
116-06-3	Aldicarb	C	313	19
117-79-3	2-Aminoanthraquinone		313	19
117-80-6	Dichlone	C		19
117-81-7	Bis(2-ethylhexyl)phthalate	C	X	19
117-81-7	DEHP	C	X	19
117-81-7	Di(2-ethylhexyl) phthalate	C	313	19
117-84-0	Di-n-octyl phthalate	C		19
117-84-0	n-Dioctylphthalate	C		19
118-74-1	Hexachlorobenzene	C	313	19
119-38-0	Carbamic acid,dimethyl-, 3-methyl-1-(1-methylethyl)-1H-pyrazol-5-yl ester (isolan)	C		
119-90-4	3,3'-Dimethoxybenzidine	C	313	19
119-93-7	3,3'-Dimethylbenzidine	C	313	19
119-93-7	o-Tolidine		C	X
120-12-7	Anthracene	C	313	19
120-36-5	2,4-DP		313	19

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym, * : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2001
Sorted Numerically by CAS

CAS	NAME	C	313	ADD
134-29-2	o-Anisidine hydrochloride		313	1990
134-32-7	alpha-Naphthylamine	C	313	1990
135-20-6	Benzeneamine, N-hydroxy-N-nitroso, ammonium salt		X	1990
135-20-6	Cupferron		313	1990
136-30-1	Carbamodithioic acid, dibutyl, sodium salt (Sodium dibutyldithiocarbamate)	C		
136-45-8	Dipropyl isocinchomerate		313	1995
137-26-8	Thiram	C	313	
137-29-1	Copper, bis(dimethylcarbamodithioato-S-S)-(copper dimethyldithiocarbamate)	C	*	
137-30-4	Zinc, bis(dimethylcarbomodithioato-S,S)-, (ziram)	C	*	
137-41-7	Potassium N-methyldithiocarbamate		313	1995
137-42-8	Metham sodium		313	1995
137-42-8	Sodium methyldithiocarbamate		X	1995
138-93-2	Disodium cyanodithioimidocarbonate		313	1995
139-13-9	Nitrilotriacetic acid		313	1990
139-25-3	3,3'-Dimethyldiphenylmethane-4,4'-diisocyanate		313*	1995
139-65-1	4,4'-Thiodianiline		313	1990
140-88-5	Ethyl acrylate	C	313	1990
141-32-2	Butyl acrylate		313	1990
141-78-6	Ethyl acetate	C		1991
142-28-9	1,3-Dichloropropane	C		1991
142-59-6	Nabam		313	1995
142-71-2	Cupric acetate	C		1991
142-84-7	Dipropylamine	C		1991
143-33-9	Sodium cyanide (Na(CN))	C	*	
143-50-0	Kepone	C		
144-34-3	Carbamodithioic acid, dimethyl-, tetraanhydrosulfid with orthothioselenious acid(selenium, tetrakis(dimethyldithiocarbamate))	C		*

CAS	NAME	C	313	ADD
145-73-3	Endothall	C		
148-18-5	Carbamodithioic acid, diethyl-,sodium salt (sodium diethyldithiocarbamate)	C		
148-79-8	2-(4-Thiazolyl)-1H-benzimidazole		X	19
148-79-8	Thiabendazole		313	19
148-82-3	Melphalan	C		19
149-30-4	2-Mercaptobenzothiazole		313	19
149-30-4	MBT		X	19
150-50-5	Merphos		313	19
150-68-5	Monuron			3
151-50-8	Potassium cyanide	C		* 19
151-56-4	Azirdine	C	X	19
151-56-4	Ethyleneimine	C	313	19
152-16-9	Diphosphoramidate, octamethyl-	C		19
156-10-5	p-Nitrosodiphenylamine		313	19
156-60-5	1,2-Dichloroethylene	C		19
156-62-7	Calcium cyanamide	C	313	
189-55-9	Benzo(rst)pentaphene	C	313*	
189-55-9	Dibenz[a,i]pyrene	C	X*	19
189-64-0	Dibenzo(a,h)pyrene		313*	19
191-24-2	Benzo[ghi]perylene	C		
191-30-0	Dibenzo(a,l)pyrene		313*	19
192-65-4	Dibenzo(a,e)pyrene		313*	19
193-39-5	Indeno(1,2,3-cd)pyrene	C	313*	19
194-59-2	7H-Dibenzo(c,g)carbazole		313*	19
196-86-9	6-Methyl-1,3-dithiolo[4,5-b]quinoxalin-2-one		X	19
196-86-9	Chinomethionat		313	19
197-14-3	Dodecylguanidine monoacetate		X	19
197-14-3	Dodine		313	19
205-82-3	Benzo(j)fluoranthene		313*	19
205-99-2	Benzo[b]fluoranthene	C	313*	19
206-44-0	Fluoranthene	C	*	

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym,* : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2001
Sorted Numerically by CAS

CAS	NAME	C	313	ADD
460-35-5	3-Chloro-1,1,1-trifluoropropane			313 1995
460-35-5	HCFC-253fb		X	1995
463-58-1	Carbon oxide sulfide (COS)	C	X	1990
463-58-1	Carbonyl sulfide	C		313 1990
465-73-6	Isodrin	C		313 1992
492-80-8	Auramine	C	X	1990
492-80-8	C.I. Solvent Yellow 34	C		313 1990
494-03-1	Chlornaphazine	C		
496-72-0	Diaminotoluene	C		
504-24-5	4-Aminopyridine	C		1992
504-24-5	Pyridine, 4-amino-	C		1992
504-60-9	1,3-Pentadiene	C		1992
505-60-2	Ethane, 1,1'-thiobis[2-chloro-		X	1995
505-60-2	Mustard gas		X	1995
506-61-6	Potassium silver cyanide	C		* 1992
506-64-9	Silver cyanide	C		* 1992
506-68-3	Cyanogen bromide	C	*	
506-77-4	Cyanogen chloride	C	*	
506-77-4	Cyanogen chloride ((CN)Cl)	C		* 1992
506-87-6	Ammonium carbonate	C		1992
506-96-7	Acetyl bromide	C		1992
507-55-1	1,3-Dichloro-1,1,2,2,3-pentafluoropropane			313 1995
507-55-1	HCFC-225cb		X	1995
509-14-8	Methane, tetranitro-	C		1992
509-14-8	Tetranitromethane	C		1992
510-15-6	Benzeneacetic acid, 4-chloro-.alpha.-(4-chlorophenyl)-.alpha.-hydroxy-, ethyl ester	C	X	
510-15-6	Chlorobenzilate	C		313
513-49-5	sec-Butylamine	C		1992
528-29-0	o-Dinitrobenzene	C		313 1990
532-27-4	2-Chloroacetophenone	C		313 1990
533-74-4	Dazomet			313

CAS	NAME	C	313	ADD
533-74-4	Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione		X	19
534-52-1	4,6-Dinitro-o-cresol	C		313 19
534-52-1	4,6-Dinitro-o-cresol and salts	C		19
534-52-1	Dinitrocresol	C	X	19
540-59-0	1,2-Dichloroethylene			313 19
540-73-8	Hydrazine, 1,2-dimethyl-	C		
540-84-1	2,2,4-Trimethylpentane	C		
540-84-1	2,2,4-Trimethylpentane	C		
540-88-5	tert-Butyl acetate	C		19
541-09-3	Uranyl acetate	C		19
541-41-3	Ethyl chloroformate			313 19
541-53-7	2,4-Dithiobiuret	C		313 19
541-53-7	Dithiobiuret	C	X	19
541-73-1	1,3-Dichlorobenzene	C		313 19
542-62-1	Barium cyanide	C		* 19
542-75-6	1,3-Dichloropropene	C	X	19
542-75-6	1,3-Dichloropropylene	C		313 19
542-76-7	3-Chloropropionitrile	C		313 19
542-76-7	Propionitrile, 3-chloro-	C	X	19
542-88-1	Bis(chloromethyl) ether	C		313 19
542-88-1	Chloromethyl ether	C	X	19
542-88-1	Dichloromethyl ether	C	X	
542-88-1	Methane, oxybis[chloro-	C	X	19
543-90-8	Cadmium acetate	C	*	
544-18-3	Cobaltous formate	C	*	
544-92-3	Copper cyanide	C		* 19
554-13-2	Lithium carbonate			313 19
554-84-7	m-Nitrophenol	C		19
556-61-6	Isothiocyanatomethane		X	19
556-61-6	Methyl isothiocyanate			313 19
557-19-7	Nickel cyanide	C	*	

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym, * : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2001

Sorted Numerically by CAS

CAS	NAME	C	313	ADD
764-41-0	1,4-Dichloro-2-butene	C	313	1992
764-41-0	2-Butene, 1,4-dichloro-	C	X	1992
765-34-4	Glycidylaldehyde	C		1992
812-04-4	1,1-Dichloro-1,2,2-trifluoroethane		313	
812-04-4	HCFC-123b		X	
815-82-7	Cupric tartrate	C	*	
822-06-0	Hexamethylene-1,6-diisocyanate	C	313*	1995
823-40-5	Diaminotoluene	C		
834-12-8	Ametryn		313	1995
834-12-8	N-Ethyl-N'-(1-methylethyl)-6-(methylthio)-1,3,5,- triazine-2,4-diamine		X	1995
842-07-9	C.I. Solvent Yellow 14		313	1990
872-50-4	N-Methyl-2-pyrrolidone		313	1995
924-16-3	N-Nitrosodi-n-butylamine	C	313	1990
924-42-5	N-Methylolacrylamide		313	1995
930-55-2	N-Nitrosopyrrolidine	C		
933-75-5	2,3,6-Trichlorophenol	C	*	
933-78-8	2,3,5-Trichlorophenol	C		* 1992
957-51-7	Diphenamid		313	
959-98-8	alpha - Endosulfan	C		1992
961-11-5	Phosphoric acid, 2-chloro-1-(2,3,5-trichlorophenyl) ethenyl dimethyl ester		X	1990
961-11-5	Tetrachlorvinphos		313	1990
989-38-8	C.I. Basic Red 1		313	1990
1024-57-3	Heptachlor epoxide	C		
1031-07-8	Endosulfan sulfate	C		1992
1066-30-4	Chromic acetate	C		* 1992
1066-33-7	Ammonium bicarbonate	C		1992
1072-35-1	Lead stearate	C		* 1992
1111-78-0	Ammonium carbamate	C		1992
1114-71-2	Butylethylcarbamothioic acid S-propyl ester		X	1995
1114-71-2	Pebulate		313	

CAS	NAME	C	313	ADD
1116-54-7	N-Nitrosodiethanolamine	C		19
1120-71-4	1,3-Propane sultone	C	X	19
1120-71-4	Propane sultone	C	313	19
1129-41-5	Carbamic acid, methyl- 3-methylphenyl ester (metolcarb)	C		
1134-23-2	Cycloate		313	19
1163-19-5	Decabromodiphenyl oxide		313	19
1185-57-5	Ferric ammonium citrate	C		19
1194-65-6	Dichlobenil	C		19
1300-71-6	Xylenol	C		19
1303-28-2	Arsenic pentoxide	C	*	
1303-32-8	Arsenic disulfide	C	*	
1303-33-9	Arsenic trisulfide	C		* 19
1309-64-4	Antimony trioxide	C		* 19
1310-58-3	Potassium hydroxide	C		19
1310-73-2	Sodium hydroxide	C		19
1313-27-5	Molybdenum trioxide		313	19
1314-20-1	Thorium dioxide		313	19
1314-32-5	Thallic oxide	C		* 19
1314-62-1	Vanadium pentoxide	C		19
1314-80-3	Sulfur phosphide	C		19
1314-84-7	Zinc phosphide	C		* 19
1314-84-7	Zinc phosphide (conc. <= 10%)	C		* 19
1314-84-7	Zinc phosphide (conc. > 10%)	C		19
1314-87-0	Lead sulfide	C		* 19
1319-72-8	2,4,5-T amines	C		19
1319-77-3	Cresol (mixed isomers)	C	313	19
1320-18-9	2,4-D Esters	C	X	19
1320-18-9	2,4-D propylene glycol butyl ether ester	C	313	19
1321-12-6	Nitrotoluene	C		19
1327-52-2	Arsenic acid	C		* 19
1327-53-3	Arsenic trioxide	C		* 19

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym, * : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as **ONLY** a CERCLA chemical, then a **STATE ONLY Form R** as well as a **Form S** must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical **MAY STILL** be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2001

Sorted Numerically by CAS

CAS	NAME	C	313	ADD
1929-82-4	Nitrapyrin			313 1995
1937-37-7	C.I. Direct Black 38			313 1990
1982-69-0	3,6-Dichloro-2-methoxybenzoic acid, sodium salt		X	1995
1982-69-0	Sodium dicamba			313 1995
2008-41-5	Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester (butylate)	C		
2008-46-0	2,4,5-T amines	C		1992
2025-85-2	Selenium dioxide	C		1992
2032-65-7	Mercaptodimethur	C	X	
2032-65-7	Methiocarb	C		313 1992
2095-58-1	Borane, trifluoro-		X	1995
2095-58-1	Boron trifluoride			313 1995
2125-68-3	Phosphorous trichloride	C		1993
2125-68-3	Phosphorus trichloride	C		
2139-59-4	Potassium bromate			313 1995
2146-10-8	Sodium chromate	C	*	
2148-87-8	Hydrogen sulfide	C		313
2151-06-8	Strontium chromate	C	*	
2151-16-3	Ammonium bichromate	C	*	
2155-70-6	Tributyltin methacrylate			313 1995
2164-07-0	7-Oxabicyclo(2.2.1)heptane-2,3-dicarboxylic acid, dipotassium salt		X	1995
2164-07-0	Dipotassium endothall			313 1995
2164-17-2	Fluometuron			313 1990
2164-17-2	Urea, N,N-dimethyl-N'-[3-(trifluoromethyl)phenyl]-		X	
2212-67-1	1H-Azepine-1 carbothioic acid, hexahydro-S-ethyl ester		X	1995
2212-67-1	Molinate			313 1995
2234-13-1	Octachloronaphthalene			313 1990
2300-66-5	Dimethylamine dicamba			313 1995
2303-16-4	Carbamothioic acid, bis(1-methylethyl)-S-(2,3-dichloro-2-propenyl)ester	C	X	

CAS	NAME	C	313	ADD
2303-16-4	Diallate	C		313
2303-17-5	Triallate			313
2312-35-8	Propargite	C		313 19
2524-03-0	Dimethyl chlorothiophosphate			313 19
2524-03-0	Dimethyl phosphorochlorodithioate		X	19
2545-59-7	2,4,5-T esters	C		19
2556-36-7	1,4-Cyclohexane diisocyanate			313* 19
2602-46-2	C.I. Direct Blue 6			313 19
2631-37-0	Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamate (promecarb)	C		
2655-15-4	2,3,5-Trimethylphenyl methylcarbamate			313 19
2699-79-8	Sulfuryl fluoride			313 19
2699-79-8	Vikane			X
2702-72-9	2,4-D sodium salt			313 19
2763-96-4	5-(Aminomethyl)-3-isoxazolol	C		19
2763-96-4	Muscimol	C		19
2764-72-9	Diquat	C		19
2832-40-8	C.I. Disperse Yellow 3			313 19
2837-89-0	2-Chloro-1,1,1,2-tetrafluoroethane			313
2837-89-0	HCFC-124			X
2921-88-2	Chlorpyrifos	C		19
2944-67-4	Ferric ammonium oxalate	C		19
2971-38-2	2,4-D chlorocrotyl ester	C		3
2971-38-2	2,4-D Esters	C	X	19
3012-65-5	Ammonium citrate, dibasic	C		19
3118-97-6	C.I. Solvent Orange 7			313 19
3164-29-2	Ammonium tartrate	C		19
3165-93-3	4-Chloro-o-toluidine, hydrochloride	C		
3173-72-6	1,5-Naphthalene diisocyanate			313* 19
3251-23-8	Cupric nitrate	C		* 19
3288-58-2	O,O-Diethyl S-methyl dithiophosphate	C		19
3383-96-8	Temephos			313

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym, * : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2001
Sorted Numerically by CAS

CAS	NAME	C	313	ADD
7440-66-6	Zinc (fume or dust)	C		1990
7446-08-4	Selenium dioxide	C		*
7446-14-2	Lead sulfate	C		* 1992
7446-18-6	Thallium(I) sulfate	C		* 1992
7446-18-6	Thalious sulfate	C		* 1992
7446-27-7	Lead phosphate	C		* 1992
7447-39-4	Cupric chloride	C		* 1992
7488-56-4	Selenium sulfide	C		* 1992
7550-45-0	Titanium chloride (TiCl ₄) (T-4)-	C	X	1990
7550-45-0	Titanium tetrachloride	C		313 1990
7558-79-4	Sodium phosphate, dibasic	C		1992
7601-54-9	Sodium phosphate, tribasic	C		1993
7631-89-2	Sodium arsenate	C		* 1993
7631-90-5	Sodium bisulfite	C		1993
7632-00-0	Sodium nitrite	C		313 1993
7645-25-2	Lead arsenate	C		* 1993
7646-85-7	Zinc chloride	C		* 1993
7647-01-0	Hydrochloric acid	C		1990
7647-01-0	Hydrogen chloride (anhydrous)	C	X	1990
7647-01-0	Hydrogen chloride (gas only)	C	X	1990
7647-18-9	Antimony pentachloride	C		* 1993
7664-38-2	Phosphoric acid	C		313 1990
7664-39-3	Hydrofluoric acid	C	X	
7664-39-3	Hydrofluoric acid (conc. 50% or greater)	C	X	
7664-39-3	Hydrogen fluoride	C		313 1990
7664-39-3	Hydrogen fluoride (anhydrous)	C	X	1990
7664-41-7	Ammonia	C		313 1990
7664-93-9	Sulfuric acid (aerosol)	C		313 1995
7681-49-4	Sodium fluoride	C		1993
7681-52-9	Sodium hypochlorite	C		1993

CAS	NAME	C	313	ADD
7696-12-0	2,2-Dimethyl-3-(2-methyl-1-propenyl)cyclopropanecarboxylic acid (1,3,4,5,6,7-hexahydro-1,3-dioxo-2H-isoindol-2-yl)methyl ester		X	19
7696-12-0	Tetramethrin			313 19
7697-37-2	Nitric acid	C		313 19
7697-37-2	Nitric acid (conc 80% or greater)	C	X	19
7699-45-8	Zinc bromide	C		* 19
7705-08-0	Ferric chloride	C		19
7718-54-9	Nickel chloride	C		* 19
7719-12-2	Phosphorous trichloride	C		19
7720-78-7	Ferrous sulfate	C		* 19
7722-64-7	Potassium permanganate	C		* 19
7723-14-0	Phosphorus	C		19
7723-14-0	Phosphorus (yellow or white)	C		313 19
7726-95-6	Bromine			313 19
7733-02-0	Zinc sulfate	C		19
7738-94-5	Chromic acid	C		* 19
7758-01-2	Potassium bromate			313 19
7758-29-4	Sodium phosphate, tribasic	C		19
7758-94-3	Ferrous chloride	C		19
7758-95-4	Lead chloride	C		* 19
7758-98-7	Cupric sulfate	C		* 19
7761-88-8	Silver nitrate	C		* 19
7773-06-0	Ammonium sulfamate	C		19
7778-39-4	Arsenic acid	C		* 19
7778-44-1	Calcium arsenate	C		* 19
7778-50-9	Potassium bichromate	C		* 19
7778-54-3	Calcium hypochlorite	C		19
7779-86-4	Zinc hydrosulfite	C		* 19
7779-88-6	Zinc nitrate	C		* 19
7782-41-4	Fluorine	C		313 19
7782-49-2	Selenium	C		313 19

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym, * : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as **ONLY** a CERCLA chemical, then a **STATE ONLY** Form R as well as a **Form S** must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2001

Sorted Numerically by CAS

CAS	NAME	C	313	ADD
10102-43-9	Nitric oxide	C		1993
10102-43-9	Nitrogen oxide (NO)	C		1993
10102-44-0	Nitrogen dioxide	C		1993
10102-45-1	Thallium(I) nitrate	C	*	1993
10102-48-4	Lead arsenate	C	*	1993
10108-64-2	Cadmium chloride	C	*	
10124-50-2	Potassium arsenite	C	*	1993
10124-56-8	Sodium phosphate, tribasic	C		1993
10140-65-5	Sodium phosphate, dibasic	C		1993
10192-30-0	Ammonium bisulfite	C		1993
10196-04-0	Ammonium sulfite	C		
10222-01-2	2,2-Dibromo-3-nitrilopropionamide			313 1995
10294-34-5	Borane, trichloro-		X	1995
10294-34-5	Boron trichloride			313 1995
10347-54-3	1,4-Bis(methylisocyanate)cyclohexane			313* 1995
10361-89-4	Sodium phosphate, tribasic	C		1993
10380-29-7	Cupric sulfate, ammoniated	C	*	
10415-75-5	Mercurous nitrate	C	*	
10421-48-4	Ferric nitrate	C	*	
10453-86-8	5-(Phenylmethyl)-3-furanyl)methyl 2,2-dimethyl-3-(2-methyl-1-propenyl)cyclopropanecarboxylate		X	1995
10453-86-8	Resmethrin			313 1995
10544-72-6	Nitrogen dioxide	C		
10588-01-9	Sodium bichromate	C	*	
10605-21-7	Carbamic acid, 1H-benzimidazol-2-yl,methyl ester (carbendazim)	C		
11096-82-5	Aroclor 1260	C		
11097-69-1	Aroclor 1254	C		1993
11104-28-2	Aroclor 1221	C		1993
11115-74-5	Chromic acid	C	*	
11141-16-5	Aroclor 1232	C		1993
12002-03-8	Cupric acetoarsenite	C		1993

CAS	NAME	C	313	ADD
12002-03-8	Paris green	C		19
12039-52-0	Selenious acid, dithallium(1+) salt	C	*	19
12054-48-7	Nickel hydroxide	C	*	19
12122-67-7	Carbamodithioic acid, 1,2-ethanediybis-, zinc complex	X		19
12122-67-7	Zineb			313 19
12125-01-8	Ammonium fluoride	C		19
12125-02-9	Ammonium chloride	C		19
12135-76-1	Ammonium sulfide	C		19
12427-38-2	Carbamodithioic acid, 1,2-ethanediybis-, manganese complex			X
12427-38-2	Maneb			313 19
12672-29-6	Aroclor 1248	C		
12674-11-2	Aroclor 1016	C		19
12771-08-3	Sulfur monochloride	C		19
13194-48-4	Ethoprop			313 19
13194-48-4	Ethoprophos		X	19
13194-48-4	Phosphorodithioic acid O-ethyl S,S-dipropyl ester		X	19
13356-08-6	Fenbutatin oxide			313 19
13356-08-6	Hexakis(2-methyl-2-phenylpropyl)distannoxane		X	19
13463-39-3	Nickel carbonyl	C	*	19
13463-40-6	Iron carbonyl (Fe(CO) ₅), (TB-5-11)-			X
13463-40-6	Iron, pentacarbonyl-			313 19
13474-88-9	1,1-Dichloro-1,2,2,3,3-pentafluoropropane			313 19
13474-88-9	HCFC-225cc			X
13560-99-1	2,4,5-T salts	C		19
13597-99-4	Beryllium nitrate	C	*	19
13684-56-5	Desmedipham		313	1995
13746-89-9	Zirconium nitrate	C	*	19
13765-19-0	Calcium chromate	C	*	19
13814-96-5	Lead fluoborate	C	*	
13826-83-0	Ammonium fluoborate	C		19
13952-84-6	sec-Butylamine	C		19

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym, * : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2001

Sorted Numerically by CAS

CAS	NAME	C	313	ADD
23950-58-5	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)	C	X	1993
23950-58-5	Pronamide	C		313
25154-54-5	Dinitrobenzene (mixed isomers)	C		
25154-55-6	Nitrophenol (mixed isomers)	C		1993
25155-30-0	Sodium dodecylbenzenesulfonate	C		1993
25167-82-2	Trichlorophenol	C	*	
25168-15-4	2,4,5-T esters	C		
25168-26-7	2,4-D Esters	C		
25311-71-1	2-((Ethoxy((1-methylethyl)amino]phosphinothioyl]oxy) benzoic acid 1-methylethyl ester		X	1995
25311-71-1	Isofenphos			313 1995
25321-14-6	Dinitrotoluene (mixed isomers)	C		313
25321-22-6	Dichlorobenzene	C	X	
25321-22-6	Dichlorobenzene (mixed isomers)	C		313
25376-45-8	Diaminotoluene (mixed isomers)	C		313 1990
25376-45-8	Toluenediamine	C	X	1990
25550-58-7	Dinitrophenol	C		1993
26002-80-2	2,2-Dimethyl-3-(2-methyl-1-propenyl)cyclopropanecarboxylic acid (3-phenoxyphenyl)methyl ester		X	1995
26002-80-2	Phenothrin			313
26264-06-2	Calcium dodecylbenzenesulfonate	C		
26419-73-8	1,3-Dithiolane-2-carboxaldehyde, 2,4-dimethyl-, O-[(methylamino)carbonyl]oxime (tripate)	C		
26471-62-5	Benzene, 1,3-diisocyanatomethyl-	C	X	1990
26471-62-5	Toluene diisocyanate (unspecified isomer)	C	X	
26471-62-5	Toluenediisocyanate (mixed isomers)	C		313
26628-22-8	Sodium azide (Na(N3))	C		313
26638-19-7	Dichloropropane	C		
26644-46-2	N,N'-(1,4-Piperazinediylbis(2,2,2-trichloroethylidene)) bisformamide		X	1995
26644-46-2	Triforine			313

CAS	NAME	C	313	ADD
26952-23-8	Dichloropropene	C		
27176-87-0	Dodecylbenzenesulfonic acid	C		
27314-13-2	4-Chloro-5-(methylamino)-2-[3-(trifluoromethyl)phenyl]-3(2H)-pyridazinone		X	19
27314-13-2	Norflurazon			313 19
27323-41-7	Triethanolamine dodecylbenzene sulfonate	C		19
27774-13-6	Vanadyl sulfate	C		19
28057-48-9	d-trans-Allethrin			313 19
28057-48-9	d-trans-Chrysanthemic acid of d-allethrine		X	19
28249-77-6	Carbamic acid, diethylthio-, S-(p-chlorobenzyl)		X	19
28249-77-6	Thiobencarb			313 19
28300-74-5	Antimony potassium tartrate	C		* 19
28407-37-6	C.I. Direct Blue 218			313 19
29082-74-4	Octachlorostyrene			313
29232-93-7	O-(2-(Diethylamino)-6-methyl-4-pyrimidinyl)-O,O-dimethyl phosphorothioate		X	19
29232-93-7	Pirimiphos methyl			313 19
30525-89-4	Paraformaldehyde	C		
30558-43-1	Ethanimidothioci acid, 2-(dimethylamino-n-hydroxy-2-oxo-, methyl ester (A2213)	C		
30560-19-1	Acephate			313 19
30560-19-1	Acetylphosphoramidothioic acid O,S-dimethyl ester		X	19
31218-83-4	3-((Ethylamino)methoxyphosphinothioyl)oxy)-2-butenic acid, 1-methylethyl ester		X	19
31218-83-4	Propetamphos			313 19
32534-95-5	2,4,5-TP esters	C		
33089-61-1	Amitraz			3
33213-65-9	beta - Endosulfan	C		
34014-18-1	N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-N',N'-dimethylurea		X	19
34014-18-1	Tebuthiuron			313 19
34077-87-7	Dichlorotrifluoroethane			313

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym, * : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2001

Sorted Numerically by CAS

CAS	NAME	C	313	ADD
55290-64-7	Dimethipin			313
55406-53-6	3-Iodo-2-propynyl butylcarbamate		313	1995
55488-87-4	Ferric ammonium oxalate	C		
56189-09-4	Lead stearate	C	*	
57213-69-1	Triclopyr triethylammonium salt		313	1995
59669-26-0	Thiodicarb			313
60168-88-9	.alpha.-(2-Chlorophenyl)-.alpha.-4-chlorophenyl)-5-pyrimidinemethanol	X		1995
60168-88-9	Fenarimol			313
60207-90-1	1-(2-(2,4-Dichlorophenyl)-4-propyl-1,3-dioxolan-2-yl)-methyl-1H-1,2,4,-triazole	X		1995
60207-90-1	Propiconazole		313	1995
61792-07-2	2,4,5-T esters	C		
62476-59-9	5-(2-Chloro-4-(trifluoromethyl)phenoxy)-2-nitrobenzoic acid, sodium salt	X		1995
62476-59-9	Acifluorfen, sodium salt		313	1995
63938-10-3	Chlorotetrafluoroethane		313	
64902-72-3	2-Chloro-N-(((4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino)carbonyl)benzenesulfonamide	X		1995
64902-72-3	Chlorsulfuron		313	1995
64969-34-2	3,3'-Dichlorobenzidine sulfate		313	1995
66441-23-4	2-(4-((6-Chloro-2-benzoxazolyl)oxy)phenoxy)propanoic acid, ethyl ester	X		1995
66441-23-4	Fenoxaprop ethyl		313	1995
67485-29-4	Hydramethylnon		313	1995
67485-29-4	Tetrahydro-5,5-dimethyl-2(1H)-pyrimidinone(3-(4-(trifluoromethyl)phenyl)-1-(2-(4-(trifluoromethyl)phenyl)ethenyl)-2-propenylidene)hydrazone	X		1995
68085-85-8	3-(2-Chloro-3,3,3-trifluoro-1-propenyl)-2,2-Dimethylcyclopropanecarboxylic acid cyano(3-phenoxyphenyl) methyl ester	X		1995

CAS	NAME	C	313	ADD
68085-85-8	Cyhalothrin		313	19
68359-37-5	3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, cyano(4-fluoro-3-phenoxyphenyl)methyl ester	X		
68359-37-5	Cyfluthrin			3
69409-94-5	Fluvalinate			3
69409-94-5	N-(2-Chloro-4-(trifluoromethyl)phenyl)-DL-valine(+)-cyano(3-phenoxyphenyl)methyl ester	X		19
69806-50-4	2-(4-(5-(Trifluoromethyl)-2-pyridinyl)oxy)phenoxy)propanoic acid, butyl ester	X		19
69806-50-4	Fluazifop butyl		313	19
71751-41-2	Abamectin			3
71751-41-2	Avermectin B1	X		19
72178-02-0	5-(2-Chloro-4-(trifluoromethyl)phenoxy)-N-methylsulfonyl-2-nitrobenzamide	X		19
72178-02-0	Fomesafen		313	19
72490-01-8	(2-(4-Phenoxy-phenoxy)-ethyl)carbamic acid ethyl ester	X		19
72490-01-8	Fenoxycarb		313	19
74051-80-2	2-(1-(Ethoxyimino) butyl)-5-(2-(ethylthio)propyl)-3-hydroxyl-2-cyclohexen-1-one	X		19
74051-80-2	Sethoxydim		313	19
75790-84-0	4-Methyldiphenylmethane-3,4-diisocyanate		313*	19
75790-87-3	2,4'-Diisocyanatodiphenyl sulfide		313*	19
76578-14-8	2-(4-((6-Chloro-2-quinoxalinyloxy)phenoxy) propanoic acid ethyl ester	X		19
76578-14-8	Quizalofop-ethyl		313	19
77501-63-4	5-(2-Chloro-4-(trifluoromethyl)phenoxy)-2-nitro-2-ethoxy-1-methyl-2-oxoethyl ester	X		19
77501-63-4	Lactofen		313	19
82657-04-3	Bifenthrin		313	19
88671-89-0	.alpha.-Butyl-.alpha.-(4-chlorophenyl)-1H-1,2,4-triazole-1-propanenitrile	X		19

CAS: Chemical Abstract Service Registry Number

313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym, * : member of a chemical category – should not be reported as an individual chemical.

C: CERCLA Chemical – If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.

NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical *MAY STILL* be listed as a CERCLA chemical.

The Massachusetts Toxics Use Reduction Act, Reportable Chemical List for Calendar Year 2001
Sorted Numerically by CAS

CAS NAME	NAME	C	313	ADD	CAS
-------------	------	---	-----	-----	-----

CAS: Chemical Abstract Service Registry Number
313: EPCRA 313 Reportable Chemical, X: EPCRA 313 Synonym,* : member of a chemical category
– should not be reported as an individual chemical.
C: CERCLA Chemical – **If a chemical is noted as ONLY a CERCLA chemical, then a STATE ONLY Form R as well as a Form S must be completed and submitted to DEP with your toxics use report.**
NOTE: Some EPA Chemicals may have been delisted from the EPCRA 313 list, but the chemical **MAY STILL** be listed as a CERCLA chemical.