Background Document on

HWIR Exemption Chemicals

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1.0 Introduction

As part of the proposed 1999 Hazardous Waste Identification Rule (HWIR), EPA developed a multi-pathway risk model that will be used to determine concentrations (i.e., levels) of chemicals below which RCRA listed wastes could "exit" RCRA Subtitle C Regulations. Prior to running this model, EPA needed to determine which chemicals were present or expected to be present in all of the RCRA listed wastes and then determine which chemicals were "of concern" with respect to potential toxicity. The composite list of chemicals for examination of potential toxicity is called the HWIR Exemption Chemicals List. This document provides information on the process that was used to develop this list.

2.0 Development of the HWIR Exemption Chemicals List

2.1 What was the first step?

In developing the HWIR Exemption Chemicals List, EPA first examined the various key lists of wastes and lists of chemicals "of concern" that exist in various parts of the RCRA regulations. EPA focused on regulatory lists that delineate which chemicals are present or expected to be present in RCRA listed wastes. Not unexpectedly, there was a significant overlap of the chemicals on these lists. Many of the chemical entries on the lists, however, turned out to be "classes" of multiple chemicals or mixtures of chemicals rather than "single" chemicals. EPA then had to sort out which single chemicals were already on the list that represented these multi-chemical categories and whether additional chemicals had to be added to complete the representation. So the first step EPA took was to make a composite list of all the chemical entries on the selected regulatory lists. This composite list was then called the "Master List".

2.2 What sources were used to create this Master List?

The Master List was composited from six regulatory lists of wastes and chemicals "of concern" to the RCRA program. These included: 1) 40 CFR 261 Appendix VII; 2) 40 CFR 261.33(e) "P" waste codes; 3) 40 CFR 261.33(f) "U" waste codes; 4) 40 CFR 268.40, the Land Disposal Restrictions (LDR) treatment standards table; 5) 40 CFR 261 Appendix VIII; and 6) 40 CFR 264 Appendix IX.

2.3 Why were these sources used?

40 CFR 261 Appendix VII was the first source chosen to incorporate into the Master List because it lists the chemicals that were used as the basis for listing wastes from specific and nonspecific sources (i.e., "F" and "K" listings respectively). As such, it was a logical starting point for identifying key hazardous chemicals expected to be found particularly in untreated "F" and "K" wastes.

Appendix VII was not set up, however, to provide the basis for listing the "P" and "U"waste

codes. EPA felt it was unnecessary to repeat the long list of chemicals that the "P" and "U" wastes represent, in Appendix VII. So in order for HWIR to cover these wastes codes, the "P" and "U" lists of chemicals (i.e., 40 CFR 261.33(e) and (f), respectively) were incorporated into the Master List.

As generated, "P" and "U" wastes represent concentrated chemicals. They are defined in the regulations as being "discarded commercial chemical products, off-specification species, container residues" or "spill residues thereof." Because of this, "P" and "U" wastes are expected to contain chemical isomers, chemical by-products, and degradation products that are typically associated with the corresponding chemical products. Derived-from "P" and "U" wastes are also expected to potentially contain these additional chemicals. The LDR Treatment Standards for these wastes took this into account and established standards for these additional chemical isomers, chemical by-products, and degradation products. As such, the Master List also incorporates these additional chemicals.

Since Appendix VII was not meant to be a complete list of hazardous chemicals found in these wastes, additional sources of information on chemicals that might be expected to be found in these wastes were also examined. The LDR Treatment Standards (40 CFR 268.40) provide an extensive list of chemicals that are expected be found in relatively low concentrations in treatment residuals of each of the RCRA listed wastes. As such, the chemicals listed in the LDR Treatment Standards are important to include on the Master List.

At the same time, since the Master List already incorporates all the "P" and "U" chemicals as well as all the Appendix VII chemicals for the "F" and "K" wastes, it was not surprising to find that only one chemical was added to the Master List as a result of using the LDR Treatment Standards. This chemical was p-Phthalic acid which is also known as Terephthalic acid. It is listed in 40 CFR 268.40 as a regulated constituent for wastes identified as U190.

40 CFR Part 261 Appendix VIII is a comprehensive list of hazardous chemicals that was and can be used as a basis for listing a waste. [See 40 CFR 261.11(a)(3)]. It was and often is used as a starting point for RCRA permits and new RCRA regulations. Chemical entries in Appendix VIII were therefore incorporated into the Master List. Unfortunately, Appendix VIII was the biggest contributor of "classes" of multiple chemicals and mixtures of chemicals to the Master List (e.g., many of the entries are listed as "N.O.S." which stands for "not otherwise specified".) EPA is currently in the process of developing official guidance for Appendix VIII to clarify the coverage of these multi-chemical entries. While this guidance has not yet been formalized, most of the clarifications expected to be in it are the same as those found later in Tables 2A, 2B and 2C of this document. This was necessary in order to complete the development of the HWIR Exemption Chemicals List.

40 CFR Part 264 Appendix IX was also chosen as a source of chemicals for the Master List because it is the list of chemicals that are required to be analyzed for RCRA groundwater monitoring regulations. It includes hazardous chemicals that have been found at contaminated

sites under the Superfund program, and could therefore be "of concern" in mismanaged industrial wastes. Since this list was also used in the development of the LDR Treatment Standards, relatively few chemicals were added to the Master List from Appendix IX. Appendix IX contributed a total of only 13 new single chemicals that were not listed on any of the other sources used to compile the Master List. These chemicals are: Benzyl alcohol; 4-Chlorophenyl phenyl ether; Cobalt; Copper; Dibenzofuran; 2-Hexanone; Isophorone; 2-Methylnaphthalene; 3-Nitroaniline; 4-Nitroquinoline-1-oxide; Styrene; Tin; and Vinyl acetate. However, two of these chemicals, 4-Chlorophenyl phenyl ether and 2-Methylnaphthalene, are representatives of chemical classes (Chloroethers and Tars/PAHs, respectively) that are on Appendix VII. There were also two multi-chemical entries that only appeared on Appendix IX, Polychlorinated dibenzo-p-dioxins (PCDDs) and Polychlorinated dibenzofurans (PCDFs). While these two entries are not specifically found on the other lists used to compile Table 1, the major subcategories of PCDDs and PCDFs were on these lists (i.e., the Tetra-, Penta-, Hexa- and Hepta- Chloro isomers). As a result, these two Appendix IX multi-chemical entries only added Octachlorodibenzo-p-dioxin and Octachlorodibenzofuran to the Master List

2.4 So how many chemical entries are on the "Master List"?

The Master List is a composite list of all the chemical entries exactly as they were listed in these six sources. It contains 628 chemical entries and is presented in Table 1 of this document.

This list is larger than the one developed in 1995 because the scope of the chemicals and wastes "of concern" was broadened to include all the "U" and "P" wastes and their treatment standards in 40 CFR 268.40. Since 1995, additional chemicals were added to Appendix VII and Appendix VIII as a result new listings, in particular the new listings from the production of carbamates (62 FR 32978).

2.3 Why isn't the Master List used as the Exemption Chemicals List?

The Master List can not be used directly as the Exemption Chemicals List because it contains 184 entries that can not be measured directly in a waste based on how the chemical entry appears on the source used for compiling the Master List. The 184 entries are presented in this document in Table 2 - Chemical Entries Removed from the Master List.

2.4 Why can't some chemical entries be measured in wastes?

The problems with measurement of these 184 entries in wastes are presented in this document in three sub-tables of Table 2. Table 2A identifies 46 chemicals that are not reasonably expected to be found in wastes because they are very reactive, hydrolyze rather quickly, or are gases at room temperature. Table 2B identifies 48 chemicals that are directly measured by analyzing for other chemicals listed on the Master List. Table 2C identifies 90 chemical entries that represent more than one chemical. Tables 2B and 2C also identify a total of 207 chemicals that represent these 90 chemical entries.

The ability to measure all of the chemical entries on the Master List is compounded by another problem, namely the partial overlap of coverage of multi-chemical entries. The way a particular chemical or multi-chemical entry is worded on the six different sources used to compile the Master List varies such that there are slightly different meanings of what is covered by that entry. A good example of this problem is that there are 16 different entries for the different forms of "Cyanides". Appendix VII uses the terms "Complexed Cyanide", "Cyanide complexes", "Cyanide salts" and the generic term "Cyanide". Appendix VIII tries to cover everything using the term "Cyanides, soluble salts and complexes, N.O.S.". Appendix IX uses only the very generic name "Cyanide". There are nine individual cyanide salts listed with "P" codes that are also specifically listed in Appendix VIII (i.e., cyanide salts of Barium, Calcium, Copper, Nickel, Potassium, Potassium/Silver, Silver, Sodium and Zinc). Both of these sources also list Hydrogen Cyanide and there is also a generic "P" listing for "Cyanides, soluble cyanide salts, N.O.S." (i.e., P030). The LDR Treatment Standards recognized this problem in establishing the treatment standards for all the wastes containing these different forms of cyanides and, in order to account for these combinations, require the measurement of "Amenable Cyanides"(i.e., those that are "amenable" to alkaline chlorination) and "Total Cyanides" which is intended to measure all salts whether they are soluble or complexed. Taking a cue from the LDR Treatment Standards, only two chemical entries instead of sixteen appear on the HWIR Exemption Chemicals List ("Cyanides, total" and "Cyanides, amenable".)

2.5 What are the measurement problems with chemical entries in Table 2A?

EPA identified 46 chemicals that are not "reasonably expected to be found in wastes" because they are relatively reactive (chemically or biologically), hydrolyze rather quickly in the environment or in wastes, or are gases at room temperature. These are presented in Table 2A of this document.

Table 2A also presents brief descriptions of the "reactivity" of each of the 46 chemicals with literature references (many of which are internet addresses so the reader can rapidly access this and other information about the chemical.)

In addition, Table 2A-1 lists rates of hydrolysis readily found in the literature for different media (air, soil, surface water and ground water) for some of these chemicals. These data help support the removal of these chemicals from the Exemption Chemicals List. EPA's Office of Solid Waste is currently examining additional "persistence" data for a large number of chemicals. While the focus of that activity is to identify high priority "persistent" "bioaccumulative" and "toxic" chemicals, the same data could be used to enhance the identification of additional chemicals that ***do not persist*** in the environment. These chemicals, if not expected to be present in wastes subject to HWIR, could also be deleted from the HWIR Exemption Chemicals List A draft list of all of these chemicals was made available in a recent Federal Register notice (see 63 FR 60332).

It is also important to note that some of these chemicals when present ***in high concentrations*** in RCRA-regulated hazardous wastes may indeed pose an immediate reactivity or ignitability hazard

or possibly an acute risk. However, the wastes expected to be examined for HWIR eligibility are treatment residues and other mixtures of wastes that are expected to contain very little, if any, of these constituents. As such, they would not be expected to exhibit these characteristics. Some of these chemicals degrade relatively rapid in the environment due to hydrolysis or reactivity with other chemicals in the wastes. Others are gases at room temperature that would be expected to rapidly escape from the solid wastes being tested.

2.6 What are the measurement problems with chemical entries in Table 2B?

EPA identified 48 chemicals that are directly measured by analyzing for other chemicals listed on the Master List. These are presented in Table 2B of this document.

Most of these are inorganic or metallic compounds that are measured in wastes by analyzing for the total amount of the corresponding metal (e.g., Arsenic acid is measured by testing for total Arsenic). Many of them dissolve in water to form other species besides dissolved metals such as cyanide (e.g., Barium cyanide). Some are organic salts that also dissolve to form a specific organic species (e.g., both Sodium and Potassium pentachlorophenate are measured by analyzing for Pentachlorophenol).

These 48 chemicals have been traditionally handled this way in many other regulations such as the LDR Treatment Standards. Risk analyses for these chemicals have also been traditionally handled in the same way. This is appropriate because the toxicity testing data usually involves dissolving these chemicals in water in order to perform the tests.

2.7 What are the measurement problems with chemical entries in Table 2C?

EPA identified 90 chemical entries listed on the Master List that represent more than one chemical. These are presented in Table 2C of this document.

In general, these fall under four different categories: 1) a multiple-chemical entry that represents a specific series or mixture of chemical isomers (e.g., Xylenes, mixed isomers); 2) a multiple-chemical entry that represents a specific class or category of chemicals that have the same organic functional group but have different levels or types of substituted elements or functional groups (e.g., Nitrosamines, N.O.S.); 3) a multiple-chemical entry that represents a mixture of chemicals that do not all have similar chemical structures (e.g., Creosote); or 4) a multiple-chemical entry that represents a series of related chemicals that are measured in wastes by analyzing for a single key chemical constituent (e.g., Lead compounds, N.O.S.).

While all the 90 chemical entries have been classified into one of these four categories, many of the chemical entries on Table 2C actually have more than one “problem associated” with it, but they still have the same issue of representing more than one chemical. For example, there are 29 chemical entries that have N.O.S. (Not Otherwise Specified) in their name. This designation causes a “problem” across all four categories, in that it tends to leave the chemical entry “open-

ended" and "unlimited" in scope. EPA examined the representative chemicals for these multi-chemical entries and discovered that for the many of the organic multi-chemical entries all of the key representative chemicals were already listed separately, thereby making the designation of N.O.S. a null set (e.g., there are only two isomers of Trichloroethane and both are already on all of the lists). For the inorganic multi-chemical entries, there could theoretically be almost an infinite number of chemicals (e.g., Lead compounds N.O.S.). This makes it difficult to count how many chemicals are actually covered by a regulation. However, since most inorganic chemicals of interest to EPA can be measured by analyzing for the component metals or ionic species such as cyanide, fluoride and sulfide, it makes it easier to account for these chemical entries by substituting the appropriate "total metal" on the Exemption Chemicals List.

In some of the broader apparently "open-ended" organic multi-chemical entries, there is a reasonable limit to which chemicals are the most likely to be present. One example is the multi-chemical entry "Endrin metabolites" which appears on all of the regulatory lists used to create the Master List. Specific chemicals were then added to the Master List to represent this somewhat vague entry. Endrin aldehyde was already on the Master List as a representative of "Endrin metabolites". Endrin ketone has been identified as another key metabolite, so it was added as a second representative. EPA has determined that it is reasonable that these two constituents are considered fully representative of this entry. While there may be more metabolites, no specific additional ones have identified. Since toxicity benchmarks for Endrin are based on testing species exposed to Endrin, it seems reasonable to assume that these metabolites would be formed during toxicity testing and therefore be accounted for in the benchmark.

Decisions on which chemicals represent the majority of these multiple chemical entries in Table 2C are the same as those made previously during the development of the Land Disposal Restrictions Treatment Standards for the corresponding RCRA waste codes. These decisions were open to public notice and comment and, in general, supported by the commenters.

2.8 How was the Exemption Chemicals List put together?

In order to put together the HWIR Exemption Chemicals List, EPA looked at all of the representative chemicals that had been determined for the 48 chemical entries in Table 2B and the 90 chemical entries in Table 2C. Each of these representative chemicals were checked to make sure they were either already on the Master List or were added if they were absent. The "final" Master List then consisted of a total of 628 chemical entries. Then the 46 chemicals that were "not reasonably expected to be found in wastes" (Table 2A), the 48 chemicals that are measured by analyzing for other chemicals (Table 2B), and the 90 multi-chemical entries (Table 2C) were deleted from the Master List. Table 2 is a composite of Tables 2A, 2B and 2C and totals 184 chemical entries. The HWIR Exemption Chemicals List (Table 3) is therefore the Master List (Table 1) minus Table 2 (Chemical Entries Removed from the Master List). There are 442 chemicals listed on the HWIR Exemption Chemicals List.

2.9 So what is the Exemption Chemicals List?

The HWIR Exemption Chemicals List is, thus, a composite list of 442 single chemicals that represent all of the 628 chemical entries on the HWIR Master List. This list of chemicals is not the list of chemicals that are required to be tested for an HWIR exemption (as described in Section IX.A of the preamble); however, this list represents chemicals that a facility would have to certify are not present in a waste in order to qualify for the HWIR exemption. The HWIR Exemption Chemicals List is likely to be listed as a new appendix to 40 CFR 261 and would likely be quite similar in format to Table 3 of this document

3.0 Tables

This section of the document presents the Tables described above. Since most of the tables are several pages long, it is important for the reader to view the Table Notes that appear at the end of each table. In particular, the notes following Table 1 are very important, in that they present the explanation of codes that are used throughout the other Tables. Tables 2B and 2C do not have any notes.

As an aid to the reader, chemicals for which the Agency has historically relied on human health benchmarks are also noted in Table 1. Constituents with established benchmarks are marked with "yes" in the far right column titled "**HB**". The information comes from "Report on Consistency of Hazardous Waste Identification Rule (HWIR) benchmarks with Current Agency Values and Guidelines". This document can also be found in the docket for the 1999 HWIR proposal.

Table 1 - HWIR Master List

EC	Sort #	Chemical Name [Alternate Names]	CASRN	Type	App VII	App VIII	App IX	U/P Codes	40 CFR 268.40	F039	HB
no	A001	All constituents for which treatment standards are specified for multi-source leachate - F039	NA	MC-M	o				o	o	
yes	A002	A2123 [Ethanimidothioic acid, 2-(dimethylamino) -N-hydroxy-2-oxo-,methyl ester]	30558-43-1	S		o		U394	o		
yes	A003	Acenaphthene	83-32-9	RC-C	RC	RC	o	RC	o	o	yes
yes	A004	Acenaphthylene [Acenaphthalene]	208-96-8	RC-C	o	RC	o	RC	o	o	
yes	A005	Acetaldehyde [Ethanal]	75-07-0	S				U001	o		
yes	A006	Acetone [2-Propanone]	67-64-1	S	F039		o	U002	o	o	yes
yes	A007	Acetonitrile [Ethanenitrile]	75-05-8	S	o	o	o	U003	o	o	yes
yes	A008	Acetophenone	98-86-2	S	F039	o	o	U004	o	o	yes
yes	A009	2-Acetylaminofluorene [2-AAF]	53-96-3	RC-C	F039	o	o	U005	o	o	
no	A010	Acetyl chloride	75-36-5	D-R		o		U006	o		
no	A011	1-Acetyl-2-thiourea	591-08-2	D-H		o		P002	o		
yes	A012	Acrolein [2-Propenal]	107-02-8	S	F039	o	o	P003	o	o	yes
yes	A013	Acrylamide [Propenaminde]	79-06-1	S	o	o		U007	o		yes
yes	A014	Acrylic acid	79-10-7	S				U008	o		
yes	A015	Acrylonitrile [2-Propenenitrile]	107-13-1	S	o	o	o	U009	o	o	yes
no	A016	Aflatoxins	1402-68-2	D-R		o					
yes	A017	Aldicarb	116-06-3	S		o		P070	o		
yes	A018	Aldicarb sulfone	1646-88-4	S		o		P203	o		
yes	A019	Aldrin	309-00-2	S	F039	o	o	P004	o	o	yes
yes	A020	Allyl alcohol	107-18-6	S		o		P005	o		
yes	A021	Allyl chloride [3-Chloropropylene] [3-Chloropropene]	107-05-1	S	o	o	o		o	o	yes
no	A022	Aluminum phosphide	20859-73-8	D-R		o		P006	o		
yes	A023	4-Aminobiphenyl	92-67-1	S	F039	o	o		o	o	
yes	A024	5-Aminomethyl-3-isoxazolol [Muscimol]	2763-96-4	S		o		P007	o		
yes	A025	4-Aminopyridine	504-24-5	RC-C	RC	o		P008	o		
yes	A026	Amitrole	61-82-5	S		o		U011	o		
yes	A027	Ammonium picrate	131-74-8	S				P009	o		
no	A028	Ammonium vanadate [Vanadic acid, ammonium salt]	7803-55-6	SM-1	R	o	R	P119	o	R	
yes	A029	Aniline	62-53-3	S	o	o	o	U012	o	o	yes
yes	A030	Anthracene	120-12-7	RC-C	RC	RC	o	RC	o	o	
yes	A031	Antimony [Antimony, total]	7440-36-0	RC-S	o	o	o		o	o	yes
no	A032	Antimony compounds, N.O.S.	NA	MC-S	R	o	R		R	R	
yes	A033	Aramite	140-57-8	S	F039	o	o		o	o	
yes	A034	Arsenic [Arsenic, total]	7440-38-2	RC-S	o	o	o	RC	o	o	yes
no	A035	Arsenic acid	7778-39-4	SM-1	R	o	R	P010	o	R	
no	A036	Arsenic compounds, N.O.S.	NA	MC-S	R	o	R	R	R	R	
no	A037	Arsenic pentoxide	1303-28-2	SM-1	R	o	R	P011	o	R	
no	A038	Arsenic trioxide	1327-53-3	SM-1	R	o	R	P012	o	R	
yes	A039	Auramine	492-80-8	S		o		U014	o		
yes	A040	Azaserine	115-02-6	S		o		U015	o		
yes	A041	Barban	101-27-9	S		o		U280	o		
yes	A042	Barium [Barium, total]	7440-39-3	RC-S	F039	o	o	RC	o	o	yes

Table 1 - HWIR Master List

EC	Sort #	Chemical Name [Alternate Names]	CASRN	Type	App VII	App VIII	App IX	U/P Codes	40 CFR 268.40	F039	HB
no	A043	Barium compounds, N.O.S.	NA	MC-S	R	o	R	R	R	R	
no	A044	Barium cyanide	542-62-1	SM-3	R	o	R	P013	o	R	
yes	A045	Bendiocarb	22781-23-3	S		o		U278	o		
yes	A046	Bendiocarb phenol	22961-82-6	S		o		U364	o		
yes	A047	Benomyl	17804-35-2	S	o	o		U271	o		
yes	A048	Benz[c]acridine	225-51-4	RC-C	RC	o		U016	o		
no	A049	Benzal chloride [Benzyl dichloride] [Dichloromethylbenzene]	98-87-3	D-H		o		U017	o		
yes	A050	Benz[a]anthracene	56-55-3	RC-C	o	o	o	U018	o	o	yes
yes	A051	Benzene	71-43-2	S	o	o	o	U019	o	o	yes
no	A052	Benzenearsonic acid	98-05-5	SM-1	R	o	R		R	R	
yes	A053	Benzenesulfonyl chloride	98-09-9	S				U020	o		
yes	A054	Benzidine	92-87-5	S		o		U021	o		yes
yes	A055	Benzo[b]fluoranthene	205-99-2	RC-C	o	o	o	RC	o	o	yes
yes	A056	Benzo[j]fluoranthene	205-82-3	RC-C	RC	o		RC			
yes	A057	Benzo[k]fluoranthene	207-08-9	RC-C	o	o	o	RC	o	o	
yes	A058	Benzo[g,h,i]perylene	191-24-2	RC-C	RC	RC	o	RC	o	o	
yes	A059	Benzo[a]pyrene	50-32-8	RC-C	o	o	o	U022	o	o	yes
no	A060	Benzotrichloride [Benzoic trichloride]	98-07-7	D-H*	o	o		U023	o		
yes	A061	Benzyl alcohol	100-51-6	S			o				yes
yes	A062	Benzyl chloride	100-44-7	S	o	o		P028	o		yes
yes	A063	Beryllium [Beryllium, total]	7440-41-7	RC-S	F039	RC	o	RC	o	o	yes
no	A064	Beryllium compounds, N.O.S.	NA	MC-S	R	o	R	R	R	R	
no	A065	Beryllium powder	7440-41-7	SM-1	R	o	R	P015	o	R	
yes	A066	Bromoacetone	598-31-2	S		o		P017	o		
yes	A067	Bromodichloromethane [Dichlorobromomethane]	75-27-4	RC-C	F039	RC	o		o	o	yes
yes	A068	Bromoform [Tribromomethane]	75-25-2	RC-C	F039	o	o	U225	o	o	yes
yes	A069	Bromomethane [Methyl bromide]	74-83-9	RC-C	o	o	o	U029	o	o	yes
yes	A070	4-Bromophenyl phenyl ether [p-Bromodiphenyl ether]	101-55-3	S	F039	o	o	U030	o	o	
yes	A071	Brucine [2,3-Dimethoxy strychnidin-10-one]	357-57-3	S		o		P018	o		
yes	A072	n-Butyl alcohol [n-Butanol]	71-36-3	S	F039			U031	o	o	yes
yes	A073	Butylate	2008-41-5	S	o	o			o		
yes	A074	Butyl benzyl phthalate	85-68-7	RC-C	F039	o	o		o	o	yes
no	A075	Cacodylic acid	75-60-5	SM-1	R	o	R	U136	o	R	
yes	A076	Cadmium [Cadmium, total]	7440-43-9	RC-S	o	o	o		o	o	yes
no	A077	Cadmium compounds, N.O.S.	NA	MC-S	R	o	R		R	R	
no	A078	Calcium chromate	13765-19-0	SM-1	R	o	R	U032	o	R	
no	A079	Calcium cyanide	592-01-8	SM-2	R	o	R	P021	o	R	
yes	A080	Carbaryl	63-25-2	S	o	o		U279	o		
yes	A081	Carbendazim	10605-21-7	S	o	o		U372	o		
yes	A082	Carbofuran	1563-66-2	S	o	o		P127	o		
yes	A083	Carbofuran phenol	1563-38-8	S		o		U367	o		
yes	A084	Carbon disulfide	75-15-0	S	o	o	o	P022	o	o	yes

Table 1 - HWIR Master List

EC	Sort #	Chemical Name [Alternate Names]	CASRN	Type	App VII	App VIII	App IX	U/P Codes	40 CFR 268.40	F039	HB
no	A085	Carbon oxyfluoride [Carbonyl fluoride]	353-50-4	D-H		o		U033	o		
yes	A086	Carbon tetrachloride	56-23-5	RC-C	o	o	o	U211	o	o	yes
yes	A087	Carbosulfan	55285-14-8	S	o	o		P189	o		
no	A088	Chloral [Trichloroacetaldehyde]	75-87-6	D-H, R		o		U034	o		
yes	A089	Chlorambucil	305-03-3	S		o		U035	o		
no	A090	Chlordane [Chlordane, commercial mixture]	12789-03-6	MC-I	o	o	o	R	o	R	
yes	A091	Chlordane [Chlordane, alpha and gamma isomers]	57-74-9	RC-I	o	o	o	U036	o	o	yes
no	A092	Chlorinated benzenes, N.O.S.	68411-45-0	MC-C	R	o	R	R	R	R	
no	A093	Chlorinated ethane, N.O.S.	68411-72-3	MC-C	R	o	R	R	R	R	
no	A094	Chlorinated fluorocarbons, N.O.S.	NA	MC-C	o	o	R	R	R	R	
no	A095	Chlorinated naphthalene, N.O.S.	70776-03-3	MC-C	R	o	R	R	R	R	
no	A096	Chlorinated phenol, N.O.S.	1336-35-2	MC-C	R	o	R	R	R	R	
yes	A097	Chlornaphazin	494-03-1	S		o		U026	o		
yes	A098	Chloroacetaldehyde	107-20-0	S		o		P023	o		
no	A099	Chloroalkyl ethers, N.O.S.	NA	MC-C	R	o	R	R	R	R	
yes	A100	4-Chloroaniline [p-Chloroaniline]	106-47-8	S	F039	o	o	P024	o	o	yes
yes	A101	Chlorobenzene [Monochlorobenzene]	108-90-7	RC-C	o	o	o	U037	o	o	yes
yes	A102	Chlorobenzilate	510-15-6	S	F039	o	o	U038	o	o	yes
yes	A103	p-Chloro-m-cresol	59-50-7	RC-C	o	o	o	U039	o	o	
yes	A104	Chloroethane [Ethyl chloride]	75-00-3	RC-C	F039	RC	o		o	o	
no	A105	Chloroethers	NA	MC-C	o	R	R	R	R	R	
yes	A106	bis-(2-Chloroethoxy) methane [Dichloromethoxy ethane]	111-91-1	S		o	o	U024	o	o	
yes	A107	bis-(2-Chloroethyl) ether [Dichloroethyl ether] [1,1'-Oxybis(2-chloroethane)]	111-44-4	RC-C	o	o	o	U025	o	o	yes
no	A108	2-Chloroethyl vinyl ether	110-75-8	D-H*		o		U042	o		
yes	A109	Chloroform [Trichloromethane]	67-66-3	RC-C	o	o	o	U044	o	o	yes
yes	A110	bis-(2-Chloroisopropyl) ether [2,2'-Oxybis(1-chloropropane)] [Bis-(2-Chloro-1-methylethyl) ether]	108-60-1	RC-C	RC	o	o	U027	o		
yes	A111	Chloromethane [Methyl chloride]	74-87-3	RC-C	o	o	o	U045	o	o	yes
yes	A112	bis-(Chloromethyl) ether [Dichloromethyl ether]	542-88-1	RC-C	o	o		P016	o		
no	A113	Chloromethyl methyl ether	107-30-2	D-H*		o		U046	o		
yes	A114	2-Chloronaphthalene [beta-Chloronaphthalene]	91-58-7	RC-C	F039	o	o	U047	o	o	
yes	A115	2-Chlorophenol [o-Chlorophenol]	95-57-8	RC-C	o	o	o	U048	o	o	yes
yes	A116	4-Chlorophenyl phenyl ether [p-Chlorodiphenyl ether]	7005-72-3	RC-C	RC	RC	o				
yes	A117	1-(o-Chlorophenyl) thiourea	5344-82-1	S		o		P026	o		
yes	A118	Chloroprene [2-Chloro-1,3-butadiene]	126-99-8	S	o	o	o		o	o	yes
yes	A119	3-Chloropropionitrile	542-76-7	S		o		P027	o		
yes	A120	4-Chloro-o-toluidine hydrochloride	3165-93-3	S				U049	o		
yes	A121	Chromium [Chromium, total]	7440-47-3	RC-S	o	o	o	RC	o	o	
no	A122	Chromium VI [Hexavalent chromium]	18540-29-9	SM-1	o	RC	RC	RC	RC	RC	yes
no	A123	Chromium compounds, N.O.S.	NA	MC-S	R	o	R	R	R	R	
yes	A124	Chrysene	218-01-9	RC-C	o	o	o	U050	o	o	yes
yes	A125	Citrus red No. 2	6358-53-8	S		o					
no	A126	Coal tar creosote	8007-45-2	MC-M	R	o	R	R	R	R	

Table 1 - HWIR Master List											
EC	**Sort #**	**Chemical Name [Alternate Names]**	**CASRN**	**Type**	**App VII**	**App VIII**	**App IX**	**U/P Codes**	**40 CFR 268.40**	**F039**	**HB**
yes	A127	Cobalt [Cobalt, total]	7440-48-4	RC-N			o				
yes	A128	Copper [Copper, total]	7440-50-8	RC-S			o	RC			yes
no	A129	Copper cyanide	544-92-3	SM-3	R	o	R	P029	o	R	
yes	A130	Copper dimethyldithiocarbamate	137-29-1	S		o					
no	A131	Creosote	8021-39-4	MC-M	o	o	R	U051	o	R	
no	A132	Cresols, mixed isomers [Cresylic Acid]	1319-77-3	MC-I	o	o	R	U052	o	R	
yes	A133	o-Cresol [2-Methyl phenol]	95-48-7	RC-I	RC	RC	o	RC	o	o	yes
yes	A134	m-Cresol [3-Methyl phenol]	108-39-4	RC-I	RC	RC	o	RC	o	o	yes
yes	A135	p-Cresol [4-Methyl phenol]	106-44-5	RC-I	RC	RC	o	RC	o	o	yes
yes	A136	Crotonaldehyde [trans-2-Butenal] [beta-Methylacrolein]	4170-30-3	S		o		U053	o		
yes	A137	Cumene [Isopropyl benzene]	98-82-8	S				U055	o		yes
yes	A138	m-Cumenyl methylcarbamate	64-00-6	S		o		P202	o		
no	A139	Cyanide	57-12-5	MC-S	o	R	o	R	R	R	
no	A140	Cyanide, complexed [Cyanide (complexes)]	NA	MC-S	o	R	R	R	R	R	
no	A141	Cyanide, salts	NA	MC-S	o	R	R	R	R	R	
yes	A142	Cyanides, amenable	57-12-5	RC-S	RC	RC	RC	RC	o	o	yes
no	A143	Cyanides, soluble cyanide salts, N.O.S.	NA	MC-S	R	R	R	P030	o	R	
no	A144	Cyanides, soluble salts and complexes, N.O.S.	NA	MC-S	R	o	R	R	R	R	
yes	A145	Cyanides, total	57-12-5	RC-S	RC	RC	RC	RC	o	o	yes
no	A146	Cyanogen	460-19-5	D-G		o		P031	o		
no	A147	Cyanogen bromide	506-68-3	D-R		o		U246	o		
no	A148	Cyanogen chloride	506-77-4	D-G		o		P033	o		
yes	A149	Cycasin	14901-08-7	S		o					
yes	A150	Cycloate	1134-23-2	S		o					
yes	A151	Cyclohexane	110-82-7	S				U056	o		
yes	A152	Cyclohexanone	108-94-1	S	F039			U057	o	o	
yes	A153	2-Cyclohexyl-4,6-dinitrophenol	131-89-5	RC-C	RC	o		P034	o		
yes	A154	Cyclophosphamide	50-18-0	S		o		U058	o		
yes	A155	2,4-D [2,4-Dichlorophenoxyacetic acid]	94-75-7	RC-S	F039	o	o	U240	o	o	yes
no	A156	2,4-D salts and esters [2,4-Dichlorophenoxyacetic acid salts and esters]	NA	MC-S	R	o	R	U240	o	R	
yes	A157	Daunomycin	20830-81-3	S		o		U059	o		
yes	A158	Dazomet	533-74-4	S		o					
no	A159	DDD [DDD, commercial mixture]	72-54-8	MC-I	R	o	o	U060	o	R	yes
yes	A160	o,p'-DDD	53-19-0	RC-I	F039	RC		RC	o	o	
yes	A161	p,p'-DDD	72-54-8	RC-I	F039	o	o	U060	o	o	yes
no	A162	DDE [DDE, commercial mixture]	72-55-9	MC-I	R	o	o	R	R	R	yes
yes	A163	o,p'-DDE [o,p' TDE]	3424-82-6	RC-I	F039	RC		RC	o	o	
yes	A164	p,p'-DDE [p,p'-TDE]	72-55-9	RC-I	F039	o	o	RC	o	o	yes
no	A165	DDT [DDT, commercial mixture]	50-29-3	MC-I	R	o	o	U061	o	R	yes
yes	A166	o,p'-DDT	789-02-6	RC-I	F039	RC		RC	o	o	
yes	A167	p,p'-DDT	50-29-3	RC-I	F039	o	o	U061	o	o	yes
yes	A168	Diallate	2303-16-4	S		o	o	U062	o		yes

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EC	Sort #	Chemical Name [Alternate Names]	CASRN	Type	App VII	App VIII	App IX	U/P Codes	40 CFR 268.40	F039	HB
yes	A169	Dibenz[a,h]acridine	226-36-8	RC-C	RC	o		RC			
yes	A170	Dibenz[a,j]acridine	224-42-0	RC-C	RC	o		RC			
yes	A171	Dibenz[a,h]anthracene	53-70-3	RC-C	o	o	o	U063	o	o	yes
yes	A172	7H-Dibenzo[c,g]carbazole	194-59-2	RC-C	RC	o		RC			
yes	A173	Dibenzofuran	132-64-9	S			o				
yes	A174	Dibenzo[a,e]pyrene	192-65-4	RC-C	RC	o		RC	o	o	
yes	A175	Dibenzo[a,h]pyrene	189-64-0	RC-C	RC	o		RC			
yes	A176	Dibenzo[a,i]pyrene	189-55-9	RC-C	RC	o		U064	o		
yes	A177	Dibromochloromethane [Chlorodibromomethane]	124-48-1	RC-C	F039	RC	o		o	o	yes
yes	A178	1,2-Dibromo-3-chloropropane	96-12-8	S	F039	o	o	U066	o	o	yes
yes	A179	Di-n-butyl phthalate	84-74-2	RC-C	F039	o	o	U069	o	o	yes
no	A180	Dichlorobenzenes [Dichlorobenzene, mixed isomers]	25321-22-6	MC-I	o	o	R	R	R	R	
yes	A181	1,2-Dichlorobenzene [o-Dichlorobenzene]	95-50-1	RC-I	o	o	o	U070	o	o	yes
yes	A182	1,3-Dichlorobenzene [m-Dichlorobenzene]	541-73-1	RC-I	RC	o	o	U071	o	o	
yes	A183	1,4-Dichlorobenzene [p-Dichlorobenzene]	106-46-7	RC-I	o	o	o	U072	o	o	yes
yes	A184	3,3'-Dichlorobenzidine	91-94-1	S		o	o	U073	o		yes
no	A185	1,4-Dichloro-2-butene, mixed isomers	764-41-0	MC-I		o	R	U074	o		
yes	A186	cis-1,4-dichloro-2-butene	1476-11-5	RC-I		RC		RC	o		
yes	A187	trans-1-4-Dichloro-2-butene	110-57-6	RC-I		RC	o	RC	o		
yes	A188	Dichlorodifluoromethane [CFC-12]	75-71-8	RC-C	RC	o	o	U075	o	o	yes
yes	A189	1,1-Dichloroethane [Ethylidene dichloride]	75-34-3	RC-C	o	o	o	U076	o	o	yes
yes	A190	1,2-Dichloroethane [Ethylene dichloride]	107-06-2	RC-C	o	o	o	U077	o	o	yes
no	A191	Dichloroethylene, N.O.S.	25323-30-2	MC-I	o	o	R	R	R	R	
yes	A192	1,1-Dichloroethylene [Vinylidene chloride]	75-35-4	RC-C	o	o	o	U078	o	o	yes
no	A193	1,2-Dichloroethylene, mixed isomers	540-59-0	MC-I	o	R	R	R	R	R	
yes	A194	cis-1,2-Dichloroethylene	156-59-2	RC-I	RC	RC					yes
yes	A195	trans-1,2-Dichloroethylene	156-60-5	RC-I	o	o	o	U079	o	o	yes
yes	A196	2,2'-Dichloroisopropyl ether [2,2'-Oxybis(2-chloropropane)]	39638-32-9	RC-C	RC	RC		U027	o	o	yes
yes	A197	2,4-Dichlorophenol	120-83-2	RC-C	o	o	o	U081	o	o	yes
yes	A198	2,6-Dichlorophenol	87-65-0	RC-C	o	o	o	U082	o	o	
no	A199	Dichlorophenylarsine	696-28-6	SM-1	R	o	R	P036	o	R	
no	A200	Dichloropropane, N.O.S. [Dichloropropane, isomers not specified]	26638-19-7	MC-I	o	o	R	R	R	R	
yes	A201	1,1-Dichloropropane [Propylidene chloride]	78-99-9	RC-I	RC	RC					
yes	A202	1,2-Dichloropropane [Propylene dichloride]	78-87-5	RC-I	RC	o	o	U083	o	o	yes
no	A203	Dichloropropanol, N.O.S. [Dichloropropanols, isomers not specified]	NA	MC-I	o	o					
yes	A204	1,3-Dichloropropanol	26545-73-3	RC-I	RC	RC					
yes	A205	Dichloropropene [Dichloropropylene] [Dichloro-1-Propene]	26952-23-8	RC-C	RC	RC					
no	A206	Dichloropropene, N.O.S.	NA	MC-I	o	o	R		R	R	
no	A207	1,3-Dichloropropene [1,3-Dichloropropylene, isomers not specified]	542-75-6	MC-I	o	o	R	U084	o	R	yes
yes	A208	cis-1,3-Dichloropropene [cis-1,3-Dichloropropylene]	10061-01-5	RC-I	RC	RC	o	RC	o	o	yes
yes	A209	trans-1,3-Dichloropropene [trans-1,3-Dichloropropylene]	10061-02-6	RC-I	RC	RC	o	RC	o	o	yes
yes	A210	Dieldrin	60-57-1	S	F039	o	o	P037	o	o	yes

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EC	Sort #	Chemical Name [Alternate Names]	CASRN	Type	App VII	App VIII	App IX	U/P Codes	40 CFR 268.40	F039	HB
yes	A211	1,2,3,4-Diepoxybutane [2,2'-Bioxirane]	1464-53-5	S		o		U085	o		
no	A212	Diethylarsine	692-42-2	SM-1	R	o	R	P038	o	R	
yes	A213	Diethylene glycol, dicarbamate	5952-26-1	S		o		U395	o		
no	A214	N,N'-Diethylhydrazine	1615-80-1	D-H		o		U086	o		
yes	A215	O,O-Diethyl-S-methyl dithiophosphate	3288-58-2	RC-C	RC	o		U087	o		
yes	A216	Diethyl-p-nitrophenyl phosphate	311-45-5	S		o		P041	o		
yes	A217	Diethyl phthalate	84-66-2	RC-C	F039	o	o	U088	o	o	yes
yes	A218	Diethylstilbestrol	56-53-1	S		o		U089	o		yes
yes	A219	Dihydrosafrole	94-58-6	S		o		U090	o		
no	A220	Diisopropylfluorophosphate [DFP]	55-91-4	D-H		o		P043	o		
yes	A221	Dimethoate [O,O-Dimethyl S-methylcarbamoylmethyl phosphorodithioate]	60-51-5	RC-C	RC	o	o	P044	o		yes
yes	A222	3,3'-Dimethoxybenzidine	119-90-4	S		o		U091	o		yes
yes	A223	Dimethylamine [N-Methyl methanamine]	124-40-3	S				U092	o		
yes	A224	p-Dimethylaminoazobenzene [4-Dimethylaminoazobenzene]	60-11-7	S		o	o	U093	o		
yes	A225	7,12-Dimethylbenz[a]anthracene	57-97-6	RC-C	RC	o	o	U094	o		yes
yes	A226	3,3'-Dimethylbenzidine	119-93-7	S		o	o	U095	o		yes
no	A227	Dimethylbenzyl hydroperoxide [Cumene hydroperoxide]	80-15-9	D-R				U096	o		
no	A228	Dimethylcarbamoyl chloride	79-44-7	D-H*		o		U097	o		
no	A229	1,1-Dimethylhydrazine [Unsymmetrical dimethyl hydrazine] [UDMH]	57-14-7	D-H*	o	o		U098	o		
no	A230	1,2-Dimethylhydrazine	540-73-8	D-H*		o		U099	o		
yes	A231	2,4-Dimethyl phenol	105-67-9	RC-C	o	o	o	U101	o	o	yes
yes	A232	Dimethyl phthalate	131-11-3	RC-C	F039	o	o	U102	o	o	yes
yes	A233	Dimethyl sulfate	77-78-1	S	o	o		U103	o		
yes	A234	Dimetilan	644-64-4	S		o		P191	o		
no	A235	Dinitrobenzene, N.O.S.	25154-54-5	MC-I	R	o	R		R	R	
yes	A236	1,3-Dinitrobenzene [m-Dinitrobenzene]	99-65-0	RC-C	o	RC	o				yes
yes	A237	1,4-Dinitrobenzene [p-Dinitrobenzene]	100-25-4	RC-C	F039	RC			o	o	
yes	A238	4,6-Dinitro-o-cresol [4,6-Dinitro-2-methyl phenol]	534-52-1	RC-S	RC	o	o	P047	o	o	
no	A239	4,6-Dinitro-o-cresol salts [4,6-Dinitro-2-methyl phenol salts]	NA	MC-S	R	o	R	P047	o	R	
yes	A240	2,4-Dinitrophenol	51-28-5	RC-C	o	o	o	P048	o	o	yes
yes	A241	2,4-Dinitrotoluene	121-14-2	S	o	o	o	U105	o	o	yes
yes	A242	2,6-Dinitrotoluene	606-20-2	S	F039	o	o	U106	o	o	yes
yes	A243	Dinoseb [2-sec-Butyl-4,6-dinitrophenol]	88-85-7	RC-C	RC	o	o	P020	o	o	yes
yes	A244	Di-n-octyl phthalate	117-84-0	RC-C	F039	o	o	U107	o	o	yes
yes	A245	1,4-Dioxane [1,4-Diethylene dioxide]	123-91-1	S	F039	o	o	U108	o	o	yes
yes	A246	Diphenylamine [N,N-Diphenylamine]	122-39-4	S	o	o	o		o	o	yes
yes	A247	1,2-Diphenylhydrazine	122-66-7	S	F039	o		U109	o	o	
yes	A248	Di-n-propylamine [Dipropylamine]	142-84-7	S				U110	o		
yes	A249	Disulfiram [Tetraethylthiuram disulfide]	97-77-8	S		o					
yes	A250	Disulfoton [O,O-Diethyl S-(2-(ethylthio)ethyl)phosphorodithioate]	298-04-4	RC-C	RC	o	o	P039	o	o	yes
yes	A251	Dithiobiuret	541-53-7	S		o		P049	o		
no	A252	Endosulfan [Endosulfan, isomers not specified]	115-29-7	MC-I	R	o	R	P050	o	R	yes

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EC	**Sort #**	**Chemical Name [Alternate Names]**	**CASRN**	**Type**	**App VII**	**App VIII**	**App IX**	**U/P Codes**	**40 CFR 268.40**	**F039**	**HB**
yes	A253	Endosulfan I [alpha-Endosulfan]	959-98-8	RC-I	F039	RC	o	RC	o	o	
yes	A254	Endosulfan II [beta-Endosulfan]	33213-65-9	RC-I	F039	RC	o	RC	o	o	
yes	A255	Endosulfan sulfate	1031-07-8	S	F039	RC	o	RC	o	o	
yes	A256	Endothall	145-73-3	S		o		P088	o		
yes	A257	Endrin	72-20-8	S	F039	o	o	P051	o	o	yes
yes	A258	Endrin aldehyde	7421-93-4	RC-C	F039	RC	o	RC	o	o	
yes	A259	Endrin ketone	53494-70-5	RC-C		RC		RC	RC		
no	A260	Endrin metabolites	NA	MC-C	R	o	R	P051	o	R	
yes	A261	Epichlorohydrin [1-Chloro-2,3-epoxypropane]	106-89-8	S	o	o		U041	o		yes
yes	A262	Epinephrine	51-43-4	S		o		P042	o		
yes	A263	2-Ethoxyethanol [Ethylene glycol monoethyl ether] [Cellosolve]	110-80-5	RC-C	o	o		U359	o		yes
yes	A264	Ethyl acetate	141-78-6	S	F039			U112	o	o	yes
yes	A265	Ethyl acrylate	140-88-5	S				U113	o		
yes	A266	Ethyl benzene	100-41-4	S	F039		o		o	o	yes
yes	A267	Ethyl carbamate [Urethane] [Carbamic acid, ethyl ester]	51-79-6	S		o		U238	o		
yes	A268	S-Ethyl dipropylthiocarbamate [EPTC]	759-94-4	S	o	o			o		
yes	A269	Ethylenebisdithiocarbamic acid	111-54-6	RC-S		o		U114	o		
no	A270	Ethylenebisdithiocarbamic acid, salts and esters	NA	MC-S		o		U114	o		
yes	A271	Ethylene dibromide [1,2-Dibromoethane]	106-93-4	S	o	o	o	U067	o	o	yes
no	A272	Ethyleneimine [Aziridine]	151-56-4	D-H*		o		P054	o		
yes	A273	Ethylene oxide	75-21-8	S	F039	o		U115	o	o	
yes	A274	Ethylene thiourea [2-Imidazolidinethione]	96-45-7	S	o	o		U116	o		yes
yes	A275	Ethyl ether [Ethane 1,1'-oxybis]	60-29-7	S	F039			U117	o	o	yes
yes	A276	bis-(2-Ethylhexyl) phthalate [Di-2-ethylhexyl phthalate]	117-81-7	RC-C	F039	o	o	U028	o	o	yes
yes	A277	Ethyl methacrylate	97-63-2	S	F039	o	o	U118	o	o	yes
yes	A278	Ethyl methanesulfonate	62-50-0	S		o	o	U119	o		yes
yes	A279	Ethyl Ziram	14324-55-1	S		o					
yes	A280	Famphur	52-85-7	S	F039	o	o	P097	o	o	
yes	A281	Ferbam	14484-64-1	S		o					
yes	A282	2-Fluoracetamide	640-19-7	S		o		P057	o		
yes	A283	Fluoranthene	206-44-0	RC-C	o	o	o	U120	o	o	yes
yes	A284	Fluorene	86-73-7	RC-C	RC	RC	o	RC	o	o	yes
yes	A285	Fluoride	16984-48-8	RC-S	F039	RC		RC	o	o	
no	A286	Fluorine	7782-41-4	D-G, R		o		P056	o		
yes	A287	Fluoroacetic acid, sodium salt [Sodium fluoroacetate]	62-74-8	S		o		P058	o		
yes	A288	Formaldehyde	50-00-0	S	o	o		U122	o		yes
yes	A289	Formetanate hydrochloride	23422-53-9	S		o		P198	o		
yes	A290	Formic Acid	64-18-6	S	o	o		U123	o		yes
yes	A291	Formparanate	17702-57-7	S		o		P197	o		
yes	A292	Furan	110-00-9	S				U124	o		yes
yes	A293	Furfural [2-Furancarboxaldehyde]	98-01-1	S				U125	o		
no	A294	Glycidylaldehyde [Oxiranecarboxaldehyde]	765-34-4	D-H*		o		U126	o		

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EC	Sort #	Chemical Name [Alternate Names]	CASRN	Type	App VII	App VIII	App IX	U/P Codes	40 CFR 268.40	F039	HB
no	A295	Halomethanes, N.O.S.	NA	MC-C	R	o	R	R	R	R	
yes	A296	Heptachlor	76-44-8	S	o	o	o	P059	o	o	yes
no	A297	Heptachlor epoxide [Heptachlor epoxide, isomers not specified]	1024-57-3	MC-I	F039	o	o		o	o	yes
yes	A298	Heptachlor epoxide, alpha, beta, and gamma isomers	1024-57-3	RC-I	RC	o	RC	RC	RC	RC	
no	A299	Heptachlorodibenzo-p-dioxins	37871-00-4	MC-I	o	o	R				
yes	A300	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	RC-I	RC	RC	RC				
no	A301	Heptachlorodibenzofurans	38998-75-3	MC-I	o	o	R				
yes	A302	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	RC-I	RC	RC	RC				
yes	A303	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	RC-I	RC	RC	RC				
yes	A304	Hexachlorobenzene	118-74-1	RC-C	o	o	o	U127	o	o	yes
yes	A305	Hexachloro-1,3-butadiene [Hexachlorobutadiene]	87-68-3	S	o	o	o	U128	o	o	yes
no	A306	Hexachlorocyclohexane [Hexachlorocyclohexane, isomers not specified]	NA	MC-I	o	R	R	R	R	R	
yes	A307	alpha-Hexachlorocyclohexane [alpha-BHC]	319-84-6	RC-I	RC	RC	o	RC	o	o	yes
yes	A308	beta-Hexachlorocyclohexane [beta-BHC]	319-85-7	RC-I	RC	RC	o	RC	o	o	yes
yes	A309	delta-Hexachlorocyclohexane [delta-BHC]	319-86-8	RC-I	RC	RC	o	RC	o	o	
yes	A310	gamma-Hexachlorocyclohexane [gamma-BHC] [Lindane]	58-89-9	RC-I	RC	o	o	U129	o	o	yes
yes	A311	Hexachlorocyclopentadiene	77-47-4	S	o	o	o	U130	o	o	yes
no	A312	Hexachlorodibenzo-p-dioxins [HxCDDs]	34465-46-8	MC-I	o	o	R		o	R	
yes	A313	1,2,3,4,7,8 Hexachlorodibenzo-p-dioxin	39227-28-6	RC-I	RC	RC	RC		RC	RC	
yes	A314	1,2,3,6,7,8 Hexachlorodibenzo-p-dioxin	57653-85-7	RC-I	RC	RC	RC		RC	RC	
yes	A315	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	RC-I	RC	RC	RC		RC	RC	
no	A316	Hexachlorodibenzofurans [HxCDFs]	55684-94-1	MC-I	o	o	R		o	R	
yes	A317	1,2,3,4,7,8 Hexachlorodibenzofuran	70648-26-9	RC-I	RC	RC	RC		RC	RC	
yes	A318	1,2,3,6,7,8 Hexachlorodibenzofuran	57117-44-9	RC-I	RC	RC	RC		RC	RC	
yes	A319	1,2,3,7,8,9 Hexachlorodibenzofuran	72918-21-9	RC-I	RC	RC	RC		RC	RC	
yes	A320	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	RC-I	RC	RC	RC		RC	RC	
yes	A321	Hexachloroethane	67-72-1	RC-C	o	o	o	U131	o	o	yes
yes	A322	Hexachlorophene	70-30-4	S		o	o	U132	o		yes
yes	A323	Hexachloropropene [Hexachloropropylene]	1888-71-7	S	F039	o	o	U243	o	o	
yes	A324	Hexaethyl tetraphosphate	757-58-4	S		o		P062	o		
yes	A325	2-Hexanone	591-78-6	S			o				
no	A326	Hydrazine	302-01-2	D-H, R		o		U133	o		
no	A327	Hydrogen cyanide [HCN] [Hydrocyanic acid]	74-90-8	SM-2	o	o	R	P063	o	R	
no	A328	Hydrogen fluoride [HF] [Hydrofluoric acid]	7664-39-3	SM-1	R	o		U134	o	R	
no	A329	Hydrogen sulfide	7783-06-4	SM-1	R	o	R	U135	o	R	
yes	A330	Indeno[1,2,3-cd]pyrene	193-39-5	RC-C	o	o	o	U137	o	o	yes
yes	A331	Iodomethane [Methyl iodide]	74-88-4	RC-C	F039	o	o	U138	o	o	
yes	A332	3-Iodo-2-propynyl N-butylcarbamate	55406-53-6	S		o					
yes	A333	Isobutyl alcohol [isobutanol]	78-83-1	S	o	o	o	U140	o	o	yes
yes	A334	Isodrin	465-73-6	S	F039	o	o	P060	o	o	
yes	A335	Isolan [Isopropyl methyl pyrazolyl dimethylcarbamate]	119-38-0	S		o		P192	o		
yes	A336	Isophorone	78-59-1	S			o				yes

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EC	Sort #	Chemical Name [Alternate Names]	CASRN	Type	App VII	App VIII	App IX	U/P Codes	40 CFR 268.40	F039	HB
yes	A337	Isosafrole	120-58-1	S	F039	o	o	U141	o	o	
yes	A338	Kepone [Chlordecone]	143-50-0	S	F039	o	o	U142	o	o	yes
yes	A339	Lasiocarpine	303-34-1	S		o		U143	o		
yes	A340	Lead [Lead,total]	7439-92-1	RC-S	o	o	o	RC	o	o	
no	A341	Lead acetate	301-04-2	SM-1	R	o	R	U144	o	R	
no	A342	Lead compounds, N.O.S.	NA	MC-S	R	o	R	R	R	R	
no	A343	Lead phosphate	7446-27-7	SM-1	R	o	R	U145	o	R	
no	A344	Lead subacetate	1335-32-6	SM-1	R	o	R	U146	o	R	
no	A345	Lindane [Lindane, commercial mixture - mostly gamma-BHC]	58-89-9	MC-I	R	o	R	U129	o	R	yes
no	A346	Maleic anhydride	108-31-6	D-H*	o	o		U147	o		
yes	A347	Maleic hydrazide	123-33-1	S		o		U148	o		
yes	A348	Malononitrile [Propanedinitrile]	109-77-3	S		o		U149	o		
yes	A349	Manganese dimethyldithiocarbamate	15339-36-3	S		o					
yes	A350	Melphalan	148-82-3	S		o		U150	o		
no	A351	Mercury, elemental	7439-97-6	SM-1	R	R	R	U151	o	R	
yes	A352	Mercury [Mercury, total]	7439-97-6	RC-S	o	o	o	RC	o	o	yes
no	A353	Mercury compounds, N.O.S.	NA	MC-S	R	o	R	R	R	R	
no	A354	Mercury fulminate	628-86-4	SM-1	R	o	R	P065	o	R	
yes	A355	Metam Sodium	137-42-8	S	o	o					
yes	A356	Methacrylonitrile [2-Methyl-2-propenenitrile]	126-98-7	S	F039	o	o	U152	o	o	yes
yes	A357	Methanol [Methyl alcohol]	67-56-1	S	F039			U154	o	o	yes
yes	A358	Methapyrilene	91-80-5	S	F039	o	o	U155	o	o	
yes	A359	Methiocarb	2032-65-7	S		o		P199	o		
yes	A360	Methomyl	16752-77-5	S		o		P066	o		
yes	A361	Methoxychlor	72-43-5	S	F039	o	o	U247	o	o	yes
no	A362	Methyl chlorocarbonate	79-22-1	D-H		o		U156	o		
yes	A363	3-Methylcholanthrene	56-49-5	RC-C	RC	o	o	U157	o	o	yes
yes	A364	4,4-Methylene bis-(2-chloroaniline)	101-14-4	S	F039	o		U158	o	o	
yes	A365	Methylene bromide [Dibromomethane]	74-95-3	RC-C	F039	o	o	U068	o	o	yes
yes	A366	Methylene chloride [Dichloromethane]	75-09-2	RC-C	o	o	o	U080	o	o	yes
yes	A367	Methyl ethyl ketone [2-Butanone] [MEK]	78-93-3	S	o	o	o	U159	o	o	yes
no	A368	Methyl ethyl ketone peroxide	1338-23-4	D-R		o		U160	o		
no	A369	Methyl hydrazine	60-34-4	D-H		o		P068	o		
yes	A370	Methyl isobutyl ketone [Hexone] [4-Methyl-2-pentanone]	108-10-1	S	F039		o	U161	o	o	yes
no	A371	Methyl isocyanate [Isocyanic acid, methyl ester]	624-83-9	D-H*		o		P064	o		
yes	A372	2-Methyllactonitrile [Acetone cyanohydrin]	75-86-5	S		o		P069	o		
yes	A373	Methyl methacrylate	80-62-6	S	F039	o	o	U162	o	o	yes
yes	A374	Methyl methanesulfonate	66-27-3	S	F039	o	o		o	o	
yes	A375	2-Methylnaphthalene	91-57-6	RC-C	RC	RC	o	RC			
no	A376	N-Methyl-N'-nitro-N-nitroso-guanidine [MNNG]	70-25-7	D-H*, R		o		U163	o		
yes	A377	Methyl parathion [O,O-Dimethyl O-p-nitrophenyl phosphorothioate]	298-00-0	RC-C	F039	o	o	P071	o	o	yes
yes	A378	2-Methyl pyridine [alpha-Picoline] [2-Picoline]	109-06-8	RC-C	o	o	o	U191	o		

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EC	Sort #	Chemical Name [Alternate Names]	CASRN	Type	App VII	App VIII	App IX	U/P Codes	40 CFR 268.40	F039	HB
yes	A379	Methylthiouracil	56-04-2	S		o		U164	o		
yes	A380	Metolcarb	1129-41-5	S		o		P190	o		
yes	A381	Mexacarbate	315-18-4	S		o		P128	o		
no	A382	Mitomycin C	50-07-7	D-H		o		U010	o		
yes	A383	Molinate	2212-67-1	S	o	o			o		
no	A384	Mustard “gas”	505-60-2	D-H		o					
yes	A385	Naphthalene	91-20-3	S	o	o	o	U165	o	o	yes
yes	A386	1,4-Naphthoquinone	130-15-4	S	o	o	o	U166	o		
yes	A387	1-Naphthylamine [alpha-Naphthylamine]	134-32-7	S		o	o	U167	o		
yes	A388	2-Naphthylamine [beta-Naphthylamine]	91-59-8	S	F039	o	o	U168	o	o	
yes	A389	1-Naphthyl-2-thiourea [alpha-Naphthylthiourea]	86-88-4	S		o		P072	o		
yes	A390	Nickel [Nickel, total]	7440-02-0	RC-S	o	o	o	RC	o	o	yes
no	A391	Nickel carbonyl	13463-39-3	SM-1	R	o	R	P073	o	R	
no	A392	Nickel compounds, N.O.S.	NA	MC-S	R	o	R	R	R	R	
no	A393	Nickel cyanide	557-19-7	SM-3	R	o	R	P074	o	R	
yes	A394	Nicotine	54-11-5	RC-S		o		P075	o		
no	A395	Nicotine salts	NA	MC-S		o		P075	o		
no	A396	Nitric oxide	10102-43-9	D-G, R		o		P076	o		
yes	A397	2-Nitroaniline [o-Nitroaniline] [2-Nitrobenzenamine]	88-74-4	S			o		o	o	
yes	A398	3-Nitroaniline [m-Nitroaniline] [3-Nitrobenzenamine]	99-09-2	S			o				
yes	A399	4-Nitroaniline [p-Nitroaniline] [4-Nitrobenzenamine]	100-01-6	S	F039	o	o	P077	o	o	
yes	A400	Nitrobenzene	98-95-3	S	o	o	o	U169	o	o	yes
no	A401	Nitrogen dioxide	10102-44-0	D-G		o		P078	o		
no	A402	Nitrogen mustard [Mechlorethamine]	51-75-2	D-H, R		o					
no	A403	Nitrogen mustard, HCl salt [Mechlorethamine, HCl salt]	55-86-7	D-H, R		o					
no	A404	Nitrogen mustard N-Oxide [Mechlorethamine oxide]	126-85-2	D-H, R		o					
no	A405	Nitrogen mustard N-Oxide, HCl [Mechlorethamine oxide, HCl]	302-70-5	D-H, R		o					
yes	A406	Nitroglycerine	55-63-0	S		o		P081	o		
yes	A407	2-Nitrophenol [o-Nitrophenol]	88-75-5	RC-C	RC		o		o	o	
yes	A408	4-Nitrophenol [p-Nitrophenol]	100-02-7	RC-C	RC	o	o	U170	o	o	
yes	A409	2-Nitropropane	79-46-9	S	o	o		U171	o		yes
yes	A410	4-Nitroquinoline-1-oxide	56-57-5	S			o				
no	A411	Nitrosamines, N.O.S.	35571-91-1	MC-C	R	o	R	R	R	R	
yes	A412	N-Nitrosodi-n-butylamine	924-16-3	RC-C	F039	o	o	U172	o	o	yes
yes	A413	N-Nitrosodiethanolamine	1116-54-7	RC-C		o		U173	o		
yes	A414	N-Nitrosodiethylamine	55-18-5	RC-C	F039	o	o	U174	o	o	yes
yes	A415	N-Nitrosodimethylamine	62-75-9	RC-C	F039	o	o	P082	o	o	yes
yes	A416	N-Nitrosodiphenylamine [Diphenylnitrosamine]	86-30-6	RC-C	F039	RC	o		o	o	yes
yes	A417	N-Nitrosodi-n-propylamine [Di-n-propylnitrosamine]	621-64-7	RC-C	F039	o	o	U111	o	o	yes
yes	A418	N-Nitroso-N-ethylurea	759-73-9	RC-C		o		U176	o		
yes	A419	N-Nitroso-N-methylethylamine	10595-95-6	RC-C	F039	o	o		o	o	yes
yes	A420	N-Nitroso-N-methylurea	684-93-5	RC-C		o		U177	o		

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EC	Sort #	Chemical Name [Alternate Names]	CASRN	Type	App VII	App VIII	App IX	U/P Codes	40 CFR 268.40	F039	HB
yes	A421	N-Nitroso-N-methylurethane	615-53-2	RC-C		o		U178	o		
yes	A422	N-Nitrosomethylvinylamine	4549-40-0	RC-C		o		P084	o		
yes	A423	N-Nitrosomorpholine	59-89-2	RC-C	F039	o	o		o	o	
yes	A424	N-Nitrosonornicotine	16543-55-8	RC-C		o					
yes	A425	N-Nitrosopiperidine	100-75-4	RC-C	F039	o	o	U179	o	o	yes
yes	A426	N-Nitrosopyrrolidine	930-55-2	RC-C	F039	o	o	U180	o	o	yes
yes	A427	N-Nitrososarcosine	13256-22-9	RC-C		o					
yes	A428	5-Nitro-o-toluidine [2-Methyl-5-nitroaniline]	99-55-8	S	F039	o	o	U181	o	o	
yes	A429	Octachlorodibenzo-p-dioxin [OCDD]	3268-87-9	RC-I			RC				
yes	A430	Octachlorodibenzofuran [OCDF]	39001-02-0	RC-I			RC				
yes	A431	Octamethylpyrophosphoramide	152-16-9	S		o		P085	o		yes
no	A432	Osmium tetroxide [Osmic acid]	20816-12-0	SM-1		o		P087	o		
yes	A433	Osmium	7440-04-2	RC-S		RC		RC			
yes	A434	Oxamyl	23135-22-0	S		o		P194	o		
yes	A435	Paraldehyde	123-63-7	S	o	o		U182	o		
yes	A436	Parathion [O,O-Diethyl O-p-nitrophenyl phosphorothioate]	56-38-2	RC-C	F039	o	o	P089	o	o	yes
yes	A437	Pebulate	1114-71-2	S	o	o			o		
yes	A438	Pentachlorobenzene	608-93-5	RC-C	o	o	o	U183	o	o	yes
no	A439	Pentachlorodibenzo-p-dioxins [PeCDDs]	36088-22-9	MC-I	o	o	R		o	R	
yes	A440	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	RC-I	RC	RC	RC		RC	RC	
no	A441	Pentachlorodibenzofurans [PeCDFs]	30402-15-4	MC-I	o	o	R		o	R	
yes	A442	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	RC-I	RC	RC	RC		RC	RC	
yes	A443	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	RC-I	RC	RC	RC		RC	RC	
yes	A444	Pentachloroethane	76-01-7	RC-C	o	o	o	U184	o		
yes	A445	Pentachloronitrobenzene [PCNB] [Quintobenzene] [Quintozene]	82-68-8	S	F039	o	o	U185	o	o	yes
yes	A446	Pentachlorophenol [PCP]	87-86-5	RC-S	o	o	o		o	o	yes
no	A447	Pentachlorophenol and its' chlorophenoxy derivative acids, esters, ethers, amine and other salts	NA	MC-S	o	R	R		R	R	
yes	A448	1,3-Pentadiene	504-60-9	S				U186	o		
yes	A449	bis-(Pentamethylene) thiuram tetrasulfide	120-54-7	S		o					
yes	A450	Phenacetin	62-44-2	S	F039	o	o	U187	o	o	
yes	A451	Phenanthrene	85-01-8	RC-C	F039	RC	o	RC	o	o	
yes	A452	Phenol	108-95-2	RC-C	o	o	o	U188	o	o	yes
no	A453	Phenolic compounds [Phenolic compounds, nonhalogenated]	NA	MC-C	o	R	R	R	R	R	
yes	A454	Phentermine [alpha,alpha-Dimethylphenethylamine]	122-09-8	S		o	o	P046	o		
no	A455	Phenylenediamine, mixed isomers	25265-76-3	MC-I	o	o	R				
yes	A456	1,2-Phenylenediamine [o-Phenylenediamine]	95-54-5	RC-I	RC	RC					
yes	A457	1,3-Phenylenediamine [m-Phenylenediamine]	108-45-2	RC-I	RC	RC					yes
yes	A458	1,4-Phenylenediamine [p-Phenylenediamine]	106-50-3	RC-I	RC	RC	o				
no	A459	Phenyl mercury acetate [Phenyl mercuric acetate]	62-38-4	SM-1	R	o	R	P092	o	R	yes
yes	A460	Phenylthiourea	103-85-5	S		o		P093	o		
yes	A461	Phorate [O,O-Diethyl S-(ethylthio)methyl phosphorodithioate]	298-02-2	RC-C	o	o	o	P094	o	o	yes
no	A462	Phosgene	75-44-5	D-G, H*	o	o		P095	o		

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EC	Sort #	Chemical Name [Alternate Names]	CASRN	Type	App VII	App VIII	App IX	U/P Codes	40 CFR 268.40	F039	HB
no	A463	Phosphine	7803-51-2	D-G		o		P096	o		
no	A464	Phosphorodithioic and phosphorothioic acid esters	NA	MC-C	o	R	R	R	R	R	
no	A465	Phosphorus sulfide	1314-80-3	D-R				U189	o		
yes	A466	o-Phthalic acid	88-99-3	S					o		
yes	A467	p-Phthalic acid [Terephthalic acid] [1,4-Benzenedicarboxylic acid]	100-21-0	S					o		
no	A468	Phthalic acid esters, N.O.S.	NA	MC-C	R	o	R	R	R	R	
no	A469	Phthalic anhydride	85-44-9	D-H*	o	o		U190	o	o	
yes	A470	Physostigmine	57-47-6	S		o		P204	o		
yes	A471	Physostigmine salicylate	57-64-7	S		o		P188	o		
yes	A472	Polychlorinated biphenyls, total [PCBs, total]	1336-36-3	RC-N	F039	o	o		o	o	yes
no	A473	Polychlorinated dibenzo-p-dioxins [PCDDs]	NA	MC-C	R	R	o		R	R	
no	A474	Polychlorinated dibenzofurans [PCDFs]	136677-10-6	MC-C	R	R	o		R	R	
no	A475	Potassium cyanide	151-50-8	SM-2	R	o	R	P098	o	R	
yes	A476	Potassium dimethyldithiocarbamate	128-03-0	S		o					
yes	A477	Potassium N-hydroxymethyl N-methyldithiocarbamate	51026-28-9	S		o					
yes	A478	Potassium N-methyldithiocarbamate	137-41-7	S		o					
no	A479	Potassium pentachlorophenate [Pentachlorophenol,potassium salt]	7978-73-6	SM-1	R	o	R		R	R	
no	A480	Potassium silver cyanide	506-61-6	SM-3	R	o	R	P099	o	R	
yes	A481	Promecarb	2631-37-0	S		o		P201	o		
yes	A482	Pronamide	23950-58-5	S	F039	o	o	U192	o	o	yes
yes	A483	Propanenitrile [Propionitrile] [Ethyl cyanide]	107-12-0	S	F039	o	o	P101	o	o	
yes	A484	1,3-Propane sultone	1120-71-4	S		o		U193	o		
yes	A485	Propargyl alcohol [2-Propyn-1-ol]	107-19-7	S		o		P102	o		
yes	A486	Propham	122-42-9	S		o		U373	o		
yes	A487	Propoxur [Baygon] [2-(1-Methylethoxy)-phenol, methylcarbamate]	114-26-1	S		o		U411	o		
yes	A488	n-Propyl amine [1-Propanamine]	107-10-8	S		o		U194	o		
yes	A489	1,2-Propyleneimine [2-Methylaziridine]	75-55-8	S		o		P067	o		
yes	A490	Propylthiouracil [6-Propyl-2-thiouracil]	51-52-5	S		o					
yes	A491	Prosulfocarb	52888-80-9	S		o		U387	o		
yes	A492	Pyrene	129-00-0	RC-C	F039	RC	o	RC	o	o	yes
yes	A493	Pyridine	110-86-1	RC-C	o	o	o	U196	o	o	yes
no	A494	Pyridines	NA	MC-C	o	R	R	R	R	R	
yes	A495	Quinone [p-Benzoquinone]	106-51-4	S		o		U197	o		
yes	A496	Reserpine	50-55-5	S		o		U200	o		
yes	A497	Resorcinol [1,3-Benzenediol]	108-46-3	S		o		U201	o		
yes	A498	Saccharin	81-07-2	RC-S		o		U202	o		
no	A499	Saccharin salts	NA	MC-S		o		U202	o		
yes	A500	Safrole	94-59-7	S	o	o	o	U203	o	o	yes
yes	A501	Selenium [Selenium, total]	7782-49-2	RC-S	F039	o	o	RC	o	o	yes
no	A502	Selenium compounds, N.O.S.	NA	MC-S	R	o	R	R	R	R	
no	A503	Selenious acid [Selenium dioxide, hydrated]	7783-00-8	SM-1	R	o	R	U204	o	R	
no	A504	Selenium sulfide [Selenium (IV) disulfide]	7488-56-4	SM-2	R	o	R	U205	o	R	

Table 1 - HWIR Master List

EC	Sort #	Chemical Name [Alternate Names]	CASRN	Type	App VII	App VIII	App IX	U/P Codes	40 CFR 268.40	F039	HB
yes	A505	Selenium, tetrakis(dimethyldithiocarbamate) [Selenium dimethyldithiocarbamate]	144-34-3	S		o					
no	A506	Selenourea	630-10-4	SM-1	R	o	R	P103	o	R	
yes	A507	Silver [Silver, total]	7440-22-4	RC-S	F039	o	o	RC	o	o	
no	A508	Silver compounds, N.O.S.	NA	MC-S	R	o	R	R	R	R	
no	A509	Silver cyanide	506-64-9	SM-3	R	o	R	P104	o	R	
yes	A510	Silvex [2,4,5-Trichlorophenoxypropionic acid] [2,4,5-TP]	93-72-1	RC-C	RC	o	o		o	o	yes
yes	A511	Sodium azide	26628-22-8	S				P105	o		
no	A512	Sodium cyanide	143-33-9	SM-2	R	o	R	P106	o	R	
yes	A513	Sodium dibutyldithiocarbamate	136-30-1	S		o					
yes	A514	Sodium diethyldithiocarbamate	148-18-5	S		o					
yes	A515	Sodium dimethyldithiocarbamate	128-04-1	S		o					
no	A516	Sodium pentachlorophenate	131-52-2	SM-1	R	o	R		R	R	
yes	A517	Streptozotocin	18883-66-4	S		o		U206	o		
yes	A518	Strychnine	57-24-9	RC-S		o		P108	o		yes
no	A519	Strychnine salts	NA	MC-S		o		P108	o		yes
yes	A520	Styrene [Vinyl benzene] [Phenylethylene]	100-42-5	S			o				yes
yes	A521	Sulfallate	95-06-7	S		o					
yes	A522	Sulfide	18496-25-8	RC-S	F039	RC	o	RC	o	o	
yes	A523	Sulfotepp [Tetraethyldithiopyrophosphate]	3689-24-5	RC-C	RC	o	o	P109	o		yes
no	A524	Tars, polycyclic aromatic hydrocarbons [PAHs]	130498-29-2	MC-C	o	R	R	R	R	R	
yes	A525	Tetrabutylthiuram disulfide	1634-02-2	S		o					
yes	A526	Tetramethylthiuram monosulfide [Bis-(dimethylthiocarbamoyl)sulfide]	97-74-5	S		o					
yes	A527	1,2,4,5-Tetrachlorobenzene	95-94-3	RC-I	o	o	o	U207	o	o	yes
no	A528	Tetrachlorobenzenes [Tetrachlorobenzenes, isomers not specified]	NA	MC-I	o	R	R	R	R	R	
no	A529	Tetrachlorodibenzo-p-dioxins [TCDDs]	41903-57-5	MC-I	o	o	R		R	R	
yes	A530	2,3,7,8-Tetrachlorodibenzo-p-dioxin [2,3,7,8-TCDD]	1746-01-6	RC-I	RC	o	o		RC	RC	yes
no	A531	Tetrachlorodibenzofurans [TCDFs]	30402-14-3	MC-I	o	o	R		R	R	
yes	A532	2,3,7,8-Tetrachlorodibenzofuran [2,3,7,8-TCDF]	51207-31-9	RC-I	RC	RC	RC		RC	RC	
no	A533	Tetrachloroethanes, N.O.S. [Tetrachloroethanes, isomers not specified]	25322-20-7	MC-I	o	o	R	R	R	R	
yes	A534	1,1,1,2-Tetrachloroethane	630-20-6	RC-I	o	o	o	U208	o	o	yes
yes	A535	1,1,2,2-Tetrachloroethane	79-34-5	RC-I	o	o	o	U209	o	o	yes
yes	A536	Tetrachloroethylene [Perchloroethylene]	127-18-4	S	o	o	o	U210	o	o	yes
yes	A537	2,3,4,6-Tetrachlorophenol	58-90-2	RC-S	RC	o	o		o	o	yes
no	A538	2,3,4,6-Tetrachlorophenol, potassium salt	53535-27-6	SM-1	R	o	R		R	R	
no	A539	2,3,4,6-Tetrachlorophenol, sodium salt	25567-55-9	SM-1	R	o	R		R	R	
no	A540	Tetrachlorophenols [Tetrachlorophenols, isomers not specified]	NA	MC-I	o	R	R		R	R	
no	A541	Tetrachlorophenols and their chlorophenoxy derivative acids, esters, ethers, amine and other salts	NA	MC-S	o	R	R		R	R	
no	A542	Tetraethyl lead	78-00-2	SM-1	R	o	R	P110	o	R	
no	A543	Tetraethyl pyrophosphate	107-49-3	D-H*		o		P111	o		
yes	A544	Tetrahydrofuran	109-99-9	S				U213	o		
yes	A545	Tetranitromethane	509-14-8	S		o		P112	o		
no	A546	Tetra-, penta- and hexachlorodibenzo-p-dioxins	NA	MC-C	o	R	R		o	R	

Table 1 - HWIR Master List

EC	Sort #	Chemical Name [Alternate Names]	CASRN	Type	App VII	App VIII	App IX	U/P Codes	40 CFR 268.40	F039	HB
no	A547	Tetra-, penta- and hexachlorodibenzofurans	NA	MC-C	o	R	R		o	R	
no	A548	Tetra-, penta-, hepta- and hexachlorodibenzo-p-dioxins	NA	MC-C	o	R	R		R	R	
no	A549	Tetra-, penta-, hepta- and hexachlorodibenzofurans	NA	MC-C	o	R	R		R	R	
no	A550	Thallic oxide	1314-32-5	SM-1	R	o	R	P113	o	R	
yes	A551	Thallium [Thallium, total]	7440-28-0	RC-S	F039	o	o	RC	o	o	yes
no	A552	Thallium (I) acetate	563-68-8	SM-1	R	o	R	U214	o	R	
no	A553	Thallium (I) carbonate	6533-73-9	SM-1	R	o	R	U215	o	R	
no	A554	Thallium (I) chloride	7791-12-0	SM-1	R	o	R	U216	o	R	
no	A555	Thallium compounds, N.O.S.	NA	MC-S	R	o	R	R	R	R	
no	A556	Thallium (I) nitrate	10102-45-1	SM-1	R	o	R	U217	o	R	
no	A557	Thallium selenite [Selenious acid, dithallium(1+) salt]	12039-52-0	SM-2	R	o	R	P114	o	R	
no	A558	Thallium (I) sulfate	7446-18-6	SM-1	R	o	R	P115	o	R	
yes	A559	Thioacetamide	62-55-5	S		o		U218	o		
yes	A560	Thiodicarb	59669-26-0	S		o		U410	o		
yes	A561	Thiofanox	39196-18-4	S		o		P045	o		
yes	A562	Thiomethanol [Methyl mercaptan] [Methanethiol]	74-93-1	S		o		U153	o		
yes	A563	Thionazin [O,O,-Diethyl O-pyrazinyl phosphorothioate]	297-97-2	RC-C	RC	o	o	P040	o		
yes	A564	Thiophanate-methyl	23564-05-8	S		o		U409	o		
yes	A565	Thiophenol [Benzenethiol]	108-98-5	S		o		P014	o		
yes	A566	Thiosemicarbazide	79-19-6	S		o		P116	o		
yes	A567	Thiourea	62-56-6	S		o		U219	o		
yes	A568	Thiram [Thiuram] [Tetramethylthiuram disulfide]	137-26-8	S		o		U244	o		
yes	A569	Tin [Tin, total]	7440-31-5	RC-N			o				
yes	A570	Tirpate	26419-73-8	S		o		P185	o		
yes	A571	Toluene [Methylbenzene]	108-88-3	S	o	o	o	U220	o	o	yes
yes	A572	2,4-Toluene diisocyanate	584-84-9	RC-I	RC	RC		RC	RC		
yes	A573	2,6-Toluene diisocyanate	91-08-7	RC-I	RC	RC		RC	RC		
no	A574	Toluene diisocyanate, mixed isomers [2,4- and 2,6-Toluene diisocyanate mixture]	26471-62-5	MC-I	o	o		U223	o		
no	A575	Toluenediamine [Toluenediamine, isomers not specified]	25376-45-8	MC-I	R	o		U221	o		
yes	A576	2,4-Toluenediamine [2,4-Diaminotoluene] [Toluene-2,4-diamine]	95-80-7	RC-I	o	o		RC	RC		yes
yes	A577	2,6-Toluenediamine [2,6-Diaminotoluene]	823-40-5	RC-I		o		RC	RC		
yes	A578	3,4-Toluenediamine [3,4-Diaminotoluene]	496-72-0	RC-I		o		RC	RC		
yes	A579	o-Toluidine [2-Methylaniline]	95-53-4	RC-S	o	o	o	U328	o		yes
yes	A580	p-Toluidine [4-Methylaniline]	106-49-0	S	o	o		U353	o		yes
no	A581	o-Toluidine hydrochloride	636-21-5	SM-1	R	o	R	U222	o		
yes	A582	Toxaphene [Chlorinated camphene]	8001-35-2	S	o	o	o	P123	o	o	yes
yes	A583	Triallate	2303-17-5	S		o		U389	o		
yes	A584	2,4,6-Tribromophenol	118-79-6	S	o	o		U408	o		
yes	A585	1,2,4-Trichlorobenzene	120-82-1	RC-I	o	o	o		o	o	yes
no	A586	Trichlorobenzenes [Trichlorobenzene, mixed isomers]	12002-48-1	MC-I	o	R	R	R	R	R	
no	A587	Trichloroethane [Trichloroethane, isomers not specified]	25323-89-1	MC-I	o	R	R	R	R	R	
yes	A588	1,1,1-Trichloroethane [Methyl chloroform]	71-55-6	RC-I	o	o	o	U226	o	o	yes

Table 1 - HWIR Master List

EC	Sort #	Chemical Name [Alternate Names]	CASRN	Type	App VII	App VIII	App IX	U/P Codes	40 CFR 268.40	F039	HB
yes	A589	1,1,2-Trichloroethane [Vinyl trichloride]	79-00-5	RC-I	o	o	o	U227	o	o	yes
yes	A590	Trichloroethylene	79-01-6	S	o	o	o	U228	o	o	yes
yes	A591	Trichlorofluoromethane [Trichloromonofluoromethane] [CFC-11]	75-69-4	RC-C	o	o	o	U121	o	o	yes
yes	A592	Trichloromethanethiol	75-70-7	S		o		P118	o		
yes	A593	2,4,5-Trichlorophenol	95-95-4	RC-I	RC	o	o		o	o	yes
yes	A594	2,4,6-Trichlorophenol	88-06-2	RC-I	o	o	o		o	o	yes
no	A595	Trichlorophenols [Trichlorophenols, isomers not specified]	NA	MC-I	o	R	R		R	R	
no	A596	Trichlorophenols and their chlorophenoxy derivative acids, esters, ethers, amine and other salts	NA	MC-S	o	R	R		R	R	
yes	A597	2,4,5-Trichlorophenoxyacetic acid [2,4,5,-T]	93-76-5	RC-C	RC	o	o		o	o	yes
no	A598	Trichloropropane [Trichloropropane, isomers not specified]	25735-29-9	MC-I	o	o	R		R	R	
yes	A599	1,2,3-Trichloropropane	96-18-4	RC-I	RC	o	o		o	o	yes
yes	A600	1,1,2-Trichloro-1,2,2-trifluoroethane [Freon 113]	76-13-1	RC-C	o	RC			o	o	yes
yes	A601	Triethylamine	121-44-8	S	o	o		U404	o		
yes	A602	O,O,O-Triethylphosphorothioate	126-68-1	RC-C	RC	o	o				
yes	A603	1,3,5-Trinitrobenzene [sym-Trinitrobenzene]	99-35-4	S		o	o	U234	o		yes
yes	A604	Tris-(1-azridinyl) phosphine sulfide	52-24-4	S		o					
yes	A605	Tris-(2,3 -dibromopropyl) phosphate	126-72-7	S	F039	o		U235	o	o	yes
yes	A606	Trypan blue	72-57-1	S		o		U236	o		
no	A607	Uracil mustard	66-75-1	D-H*, R		o		U237	o		
yes	A608	Vanadium [Vanadium, total]	7440-62-2	RC-S	F039	RC	o	RC	o	o	yes
no	A609	Vanadium pentoxide	1314-62-1	SM-1	R	o	R	P120	o	R	
yes	A610	Vernolate [Vernam]	1929-77-7	S	o	o			o		
yes	A611	Vinyl acetate	108-05-4	S			o				
yes	A612	Vinyl chloride [Chloroethylene] [Ethylene chloride]	75-01-4	S	o	o	o	U043	o	o	yes
yes	A613	Warfarin	81-81-2	RC-S		o		P001,U248	o		
no	A614	Warfarin salts, when present at concentrations less than 0.3%	NA	MC-S		o		U248	o		
no	A615	Warfarin salts, when present at concentrations greater than 0.3%	NA	MC-S		o		P001	o		
no	A616	Warfarin salts	NA	MC-S		o		P001,U248	o		
no	A617	Xylenes, mixed isomers [Xyenes, total]	1330-20-7	MC-I	F039		o	U239	o	o	yes
yes	A618	o-Xylene	95-47-6	RC-I	RC		RC	RC	RC	RC	
yes	A619	m-Xylene	108-38-3	RC-I	RC		RC	RC	RC	RC	
yes	A620	p-Xylene	106-42-3	RC-I	RC		RC	RC	RC	RC	
yes	A621	Zinc [Zinc,total]	7440-66-6	RC-S		RC	o	RC	o		yes
no	A622	Zinc cyanide	557-21-1	SM-3	R	o	R	P121	o	R	
no	A623	Zinc phosphide	1314-84-7	D-R		o		P122,U249	o		
no	A624	Zinc phosphide, when present at concentrations greater than 10%	1314-84-7	D-R		o		P122	o		
no	A625	Zinc phosphide, when present at concentrations of 10% or less	1314-84-7	D-R		o		U249	o		
yes	A626	Ziram	137-30-4	S	o	o		P205	o		

Table 1 - Format Notes

EC

This column provides an indication of whether or not the chemical entry on Table1 is on Table 3, HWIR Exemption Chemicals (i.e., "yes" or "no"). All the chemical entries marked with "no" can be found on Table 2, Chemical Entries Removed from the Master List and again on either Table 2A, 2b or 2C.

Sort #

This column provides a means of cross-checking information on Table 1 and can be used to sort the chemical entries when using an electronic version of this document. It also allows the user to reconfigure the chemicals in any of the Tables in this document according to the chemical alphabet system.

[Alternate Name]

Since chemicals often have more than one name on the various sources used to compile Table 1, this information provides a means of finding these alternate names without adding more chemical entries to the Table.

CASRN

This column provides the Chemical Abstracts Services Registry Number (CASRN) for each chemical or mixture that the Chemical Abstracts Service has assigned one.

App VII

This column provides an indication of whether the chemical entry listed on Table 1 is:
a) specifically listed "on" 40 CFR Part 261 Appendix VII (marked "o");
b) considered to be listed on 40 CFR Part 261 Appendix VII because it is a representative chemical of a multiple-chemical entry listed on the Appendix VII and is, therefore, covered by that listing (marked "RC");
c) a multiple-chemical entry on Table 1 that is not specifically listed on Appendix VII, but rather is "represented" by other chemicals that are on the Appendix (marked "R") - this is provided for reference only and is not intended to expand the number of chemicals on Appendix VII; or
d) listed on 40 CFR Part 261 Appendix VII solely by virtue of its presence on the list of constituents for which treatment standards are specified for F039, multi-source leachate (marked "F039").

App VIII

This column provides an indication of whether the chemical entry listed on Table 1 is:
a) specifically listed "on" 40 CFR Part 261 Appendix VIII (marked "o");
b) considered to be listed on 40 CFR Part 261 Appendix VIII because it is a representative chemical of a multiple-chemical entry listed on the Appendix VIII and is, therefore, covered by that listing (marked "RC"); or
c) a multiple-chemical entry on Table 1 that is not specifically listed on Appendix VIII, but rather is "represented" by other chemicals that are on the Appendix (marked "R") - this is provided for reference only and is not intended to expand the number of chemicals on Appendix VIII.

Table 1 - Format Notes

App IX

This column provides an indication of whether the chemical entry listed on Table 1 is:
a) specifically listed "on" 40 CFR Part 264 Appendix IX (marked "o");
b) considered to be listed on 40 CFR Part 264 Appendix IX because it is a representative chemical of a multiple-chemical entry listed on the Appendix IX and is, therefore, covered by that listing (marked "RC"); or
c) a multiple-chemical entry on Table 1 that is not specifically listed on Appendix IX, but rather is "represented" by other chemicals that are on the Appendix (marked "R") - this is provided for reference only and is not intended to expand the number of chemicals on Appendix IX.

U/P Code

This column provides the appropriate "U" or "P" RCRA waste codes listed in 40 CFR 261.33 (e) and (f) or indicates whether the chemical entry listed on Table 1 is:
a) a chemical that represents that "U" or "P" RCRA waste code during analysis of wastes (marked "RC"); or
c) a multiple-chemical entry on Table 1 that is not specifically identified with a "U" or "P" RCRA waste code, but rather is "represented" by other chemicals that are a "U" or "P" waste code (marked "R") - this is provided for reference only and is not intended to expand the number of chemicals on the list of "U" and "P" waste codes.

40 CFR 268.40

This column provides an indication of whether the chemical entry listed on Table 1 is:
a) specifically listed "on" 40 CFR Part 268.40, the Land Disposal Restriction Treatment Standards for Listed Wastes (marked "o");
b) considered to be listed on 40 CFR Part 268.40 because it is a representative chemical of a multiple-chemical entry listed on 40 CFR Part 268.40 and is, therefore, covered by that listing (marked "RC"); or
c) a multiple-chemical entry on Table 1 that is not specifically listed on 40 CFR Part 268.40, but rather is "represented" by other chemicals that are on 40 CFR Part 268.40 (marked "R") - this is provided for reference only and is not intended to expand the number of chemicals on 40 CFR Part 268.40.

F039

This column provides an indication of whether the chemical entry listed on Table 1 is:
a) specifically found "on" the list of regulated constituents for "multi-source leachate" (i.e., which has a RCRA waste code of F039) for which Land Disposal Restriction Treatment Standards have been developed (marked "o");
b) considered to be on the list of F039 constituents because it is a representative chemical of a multiple-chemical entry that is on the list of F039 constituents and is, therefore, covered by that list (marked "RC"); or
c) a multiple-chemical entry on Table 1 that is not specifically on the F039 list, but rather is"represented" by other chemicals that are on the F039 list (marked "R") - this is provided for reference only and is not intended to expand the number of chemicals on the F039 list.

HB

This column indicates whether the chemical entry is discussed in **Report on Consistency of Hazardous Waste Identification Rule (HWIR) Benchmarks with Current Agency Values and Guidelines**, U.S. EPA, 1997-e.

Table 1 - Format Notes

Type

S	A single chemical that is not representing any other multi-chemical entry or chemical class that is on Table 1.
SM-1	A single chemical that can not be measured directly in wastes and is, therefore, represented and measured by one other entry on Table 1.
SM-2	A single chemical that can not be measured directly in wastes and is, therefore, represented and measured by two other entries on Table 1.
SM-3	A single chemical that can not be measured directly in wastes and is, therefore, represented and measured by three other entries on Table 1.
MC-I	A multiple-chemical entry that represents a specific series or mixture of chemical isomers.
RC-I	An isomer representing an **MC-I** entry. The majority of these chemicals are also specifically listed on many of the sources used to compile Table 1.
MC-C	A multiple-chemical entry that represents a specific class or category of chemicals that have the same organic functional group but have different levels or types of substituted elements or functional groups.
MC-M	A multiple-chemical entry that represents a mixture of chemicals that do not all have similar chemical structures.
RC-C	A representative chemical for an **MC-C** or **MC-M** entry on Table 1. Almost all of these chemicals are also specifically listed on one or more of the sources used to compile Table 1.
MC-S	A multiple-chemical entry that represents a series of related chemicals that are measured in wastes by analyzing for a single key chemical constituent. Almost all of these chemicals are also specifically listed on one or more of the sources used to compile Table 1.
RC-S	A representative chemical that is a single key chemical constituent for **MC-S** entries, but also represent **MC-C** and **MC-M** entries. Almost all of these chemicals are also specifically listed on one or more of the sources used to compile Table 1.
RC-N	A representative of a class of chemicals for which there are no other specific entries on Table 1.
R	An entry that is not on the source list, but is represented by another entry that is on the source list.
D-G	Deleted from consideration as an HWIR Exemption Chemical because it is a gas at room temperature and would not reasonably be expected to be found in wastes eligible for an exemption.
D-H	Deleted from consideration as an HWIR Exemption Chemical because it hydrolyzes at a significant rate such that it would not reasonably be expected to be found in wastes eligible for an exemption.
D-H*	A **D-H** entry for which additional hydrolysis rates are listed in Table 2A-1.
D-R	Deleted from consideration as an HWIR Exemption Chemical because it is highly reactive either chemically or biologically under certain conditions such that it would not reasonably be expected to be found in wastes eligible for an exemption.

Table 2 - Chemical Entries Removed from the Master List
(See Tables 2A, 2B and 2C for Details)

Sort #	Chemical Name [Alternate Names]	CASRN	Type	Table 2
A001	All constituents for which treatment standards are specified for multi-source leachate - F039	NA	MC-M	2C
A010	Acetyl chloride	75-36-5	D-R	2A
A011	1-Acetyl-2-thiourea	591-08-2	D-H	2A
A016	Aflatoxins	1402-68-2	D-R	2A
A022	Aluminum phosphide	20859-73-8	D-R	2A
A028	Ammonium vanadate [Vanadic acid, ammonium salt]	7803-55-6	SM-1	2B
A032	Antimony compounds, N.O.S.	NA	MC-S	2C
A035	Arsenic acid	7778-39-4	SM-1	2B
A036	Arsenic compounds, N.O.S.	NA	MC-S	2C
A037	Arsenic pentoxide	1303-28-2	SM-1	2B
A038	Arsenic trioxide	1327-53-3	SM-1	2B
A043	Barium compounds, N.O.S.	NA	MC-S	2C
A044	Barium cyanide	542-62-1	SM-3	2B
A049	Benzal chloride [Benzyl dichloride] [Dichloromethylbenzene]	98-87-3	D-H	2A
A052	Benzenearsonic acid	98-05-5	SM-1	2B
A060	Benzotrichloride [Benzoic trichloride]	98-07-7	D-H*	2A
A064	Beryllium compounds, N.O.S.	NA	MC-S	2C
A065	Beryllium powder	7440-41-7	SM-1	2B
A075	Cacodylic acid	75-60-5	SM-1	2B
A077	Cadmium compounds, N.O.S.	NA	MC-S	2C
A078	Calcium chromate	13765-19-0	SM-1	2B
A079	Calcium cyanide	592-01-8	SM-2	2B
A085	Carbon oxyfluoride [Carbonyl fluoride]	353-50-4	D-H	2A
A088	Chloral [Trichloroacetaldehyde]	75-87-6	D-H, R	2A
A090	Chlordane [Chlordane, commercial mixture]	12789-03-6	MC-I	2C
A092	Chlorinated benzenes, N.O.S.	68411-45-0	MC-C	2C
A093	Chlorinated ethane, N.O.S.	68411-72-3	MC-C	2C
A094	Chlorinated fluorocarbons, N.O.S.	NA	MC-C	2C
A095	Chlorinated naphthalene, N.O.S.	70776-03-3	MC-C	2C
A096	Chlorinated phenol, N.O.S.	1336-35-2	MC-C	2C
A099	Chloroalkyl ethers, N.O.S.	NA	MC-C	2C
A105	Chloroethers	NA	MC-C	2C
A108	2-Chloroethyl vinyl ether	110-75-8	D-H*	2A
A113	Chloromethyl methyl ether	107-30-2	D-H*	2A
A122	Chromium VI [Hexavalent chromium]	18540-29-9	SM-1	2B
A123	Chromium compounds, N.O.S.	NA	MC-S	2C
A126	Coal tar creosote	8007-45-2	MC-M	2C
A129	Copper cyanide	544-92-3	SM-3	2B
A131	Creosote	8021-39-4	MC-M	2C
A132	Cresols, mixed isomers [Cresylic Acid]	1319-77-3	MC-I	2C
A139	Cyanide	57-12-5	MC-S	2C
A140	Cyanide, complexed [Cyanide (complexes)]	NA	MC-S	2C
A141	Cyanide, salts	NA	MC-S	2C
A143	Cyanides, soluble cyanide salts, N.O.S.	NA	MC-S	2C
A144	Cyanides, soluble salts and complexes, N.O.S.	NA	MC-S	2C
A146	Cyanogen	460-19-5	D-G	2A
A147	Cyanogen bromide	506-68-3	D-R	2A
A148	Cyanogen chloride	506-77-4	D-G	2A
A156	2,4-D salts and esters [2,4-Dichlorophenoxyacetic acid salts and esters]	NA	MC-S	2C
A159	DDD [DDD, commercial mixture]	72-54-8	MC-I	2C
A162	DDE [DDE, commercial mixture]	72-55-9	MC-I	2C
A165	DDT [DDT, commercial mixture]	50-29-3	MC-I	2C
A180	Dichlorobenzenes [Dichlorobenzene, mixed isomers]	25321-22-6	MC-I	2C
A185	1,4-Dichloro-2-butene, mixed isomers	764-41-0	MC-I	2C
A191	Dichloroethylene, N.O.S.	25323-30-2	MC-I	2C
A193	1,2-Dichloroethylene, mixed isomers	540-59-0	MC-I	2C
A199	Dichlorophenylarsine	696-28-6	SM-1	2B
A200	Dichloropropane, N.O.S. [Dichloropropane, isomers not specified]	26638-19-7	MC-I	2C
A203	Dichloropropanol, N.O.S. [Dichloropropanols, isomers not specified]	NA	MC-I	2C
A206	Dichloropropene, N.O.S.	NA	MC-I	2C
A207	1,3-Dichloropropene [1,3-Dichloropropylene, isomers not specified]	542-75-6	MC-I	2C

Table 2 - Chemical Entries Removed from the Master List
(See Tables 2A, 2B and 2C for Details)

Sort #	Chemical Name [Alternate Names]	CASRN	Type	Table 2
A212	Diethylarsine	692-42-2	SM-1	2B
A214	N,N'-Diethylhydrazine	1615-80-1	D-H	2A
A220	Diisopropylfluorophosphate [DFP]	55-91-4	D-H	2A
A227	Dimethylbenzyl hydroperoxide [Cumene hydroperoxide]	80-15-9	D-R	2A
A228	Dimethylcarbamoyl chloride	79-44-7	D-H*	2A
A229	1,1-Dimethylhydrazine [Unsymmetrical dimethyl hydrazine] [UDMH]	57-14-7	D-H*	2A
A230	1,2-Dimethylhydrazine	540-73-8	D-H*	2A
A235	Dinitrobenzene, N.O.S.	25154-54-5	MC-I	2C
A239	4,6-Dinitro-o-cresol salts [4,6-Dinitro-2-methyl phenol salts]	NA	MC-S	2C
A252	Endosulfan [Endosulfan, isomers not specified]	115-29-7	MC-I	2C
A260	Endrin metabolites	NA	MC-C	2C
A270	Ethylenebisdithiocarbamic acid, salts and esters	NA	MC-S	2C
A272	Ethyleneimine [Aziridine]	151-56-4	D-H*	2A
A286	Fluorine	7782-41-4	D-G, R	2A
A294	Glycidylaldehyde [Oxiranecarboxaldehyde]	765-34-4	D-H*	2A
A295	Halomethanes, N.O.S.	NA	MC-C	2C
A297	Heptachlor epoxide [Heptachlor epoxide, isomers not specified]	1024-57-3	MC-I	2C
A299	Heptachlorodibenzo-p-dioxins	37871-00-4	MC-I	2C
A301	Heptachlorodibenzofurans	38998-75-3	MC-I	2C
A306	Hexachlorocyclohexane [Hexachlorocyclohexane, isomers not specified]	NA	MC-I	2C
A312	Hexachlorodibenzo-p-dioxins [HxCDDs]	34465-46-8	MC-I	2C
A316	Hexachlorodibenzofurans [HxCDFs]	55684-94-1	MC-I	2C
A326	Hydrazine	302-01-2	D-H, R	2A
A327	Hydrogen cyanide [HCN] [Hydrocyanic acid]	74-90-8	SM-2	2B
A328	Hydrogen fluoride [HF] [Hydrofluoric acid]	7664-39-3	SM-1	2B
A329	Hydrogen sulfide	7783-06-4	SM-1	2B
A341	Lead acetate	301-04-2	SM-1	2B
A342	Lead compounds, N.O.S.	NA	MC-S	2C
A343	Lead phosphate	7446-27-7	SM-1	2B
A344	Lead subacetate	1335-32-6	SM-1	2B
A345	Lindane [Lindane, commercial mixture - mostly gamma-BHC]	58-89-9	MC-I	2C
A346	Maleic anhydride	108-31-6	D-H*	2A
A351	Mercury, elemental	7439-97-6	SM-1	2B
A353	Mercury compounds, N.O.S.	NA	MC-S	2C
A354	Mercury fulminate	628-86-4	SM-1	2B
A362	Methyl chlorocarbonate	79-22-1	D-H	2A
A368	Methyl ethyl ketone peroxide	1338-23-4	D-R	2A
A369	Methyl hydrazine	60-34-4	D-H	2A
A371	Methyl isocyanate [Isocyanic acid, methyl ester]	624-83-9	D-H*	2A
A376	N-Methyl-N'-nitro-N-nitroso-guanidine [MNNG]	70-25-7	D-H*, R	2A
A382	Mitomycin C	50-07-7	D-H	2A
A384	Mustard “gas”	505-60-2	D-H	2A
A391	Nickel carbonyl	13463-39-3	SM-1	2B
A392	Nickel compounds, N.O.S.	NA	MC-S	2C
A393	Nickel cyanide	557-19-7	SM-3	2B
A395	Nicotine salts	NA	MC-S	2C
A396	Nitric oxide	10102-43-9	D-G, R	2A
A401	Nitrogen dioxide	10102-44-0	D-G	2A
A402	Nitrogen mustard [Mechlorethamine]	51-75-2	D-H, R	2A
A403	Nitrogen mustard, HCl salt [Mechlorethamine, HCl salt]	55-86-7	D-H, R	2A
A404	Nitrogen mustard N-Oxide [Mechlorethamine oxide]	126-85-2	D-H, R	2A
A405	Nitrogen mustard N-Oxide, HCl [Mechlorethamine oxide, HCl]	302-70-5	D-H, R	2A
A411	Nitrosamines, N.O.S.	35571-91-1	MC-C	2C
A432	Osmium tetroxide [Osmic acid]	20816-12-0	SM-1	2B
A439	Pentachlorodibenzo-p-dioxins [PeCDDs]	36088-22-9	MC-I	2C
A441	Pentachlorodibenzofurans [PeCDFs]	30402-15-4	MC-I	2C
A447	Pentachlorophenol and its’ chlorophenoxy derivative acids, esters, ethers, amine and other salts	NA	MC-S	2C
A453	Phenolic compounds [Phenolic compounds, nonhalogenated]	NA	MC-C	2C
A455	Phenylenediamine, mixed isomers	25265-76-3	MC-I	2C
A459	Phenyl mercury acetate [Phenyl mercuric acetate]	62-38-4	SM-1	2B
A462	Phosgene	75-44-5	D-G, H*	2A

Table 2 - Chemical Entries Removed from the Master List
(See Tables 2A, 2B and 2C for Details)

Sort #	Chemical Name [Alternate Names]	CASRN	Type	Table 2
A463	Phosphine	7803-51-2	D-G	2A
A464	Phosphorodithioic and phosphorothioic acid esters	NA	MC-C	2C
A465	Phosphorus sulfide	1314-80-3	D-R	2A
A468	Phthalic acid esters, N.O.S.	NA	MC-C	2C
A469	Phthalic anhydride	85-44-9	D-H*	2A
A473	Polychlorinated dibenzo-p-dioxins [PCDDs]	NA	MC-C	2C
A474	Polychlorinated dibenzofurans [PCDFs]	136677-10-6	MC-C	2C
A475	Potassium cyanide	151-50-8	SM-2	2B
A479	Potassium pentachlorophenate [Pentachlorophenol,potassium salt]	7978-73-6	SM-1	2B
A480	Potassium silver cyanide	506-61-6	SM-3	2B
A494	Pyridines	NA	MC-C	2C
A499	Saccharin salts	NA	MC-S	2C
A502	Selenium compounds, N.O.S.	NA	MC-S	2C
A503	Selenious acid [Selenium dioxide, hydrated]	7783-00-8	SM-1	2B
A504	Selenium sulfide [Selenium (IV) disulfide]	7488-56-4	SM-2	2B
A506	Selenourea	630-10-4	SM-1	2B
A508	Silver compounds, N.O.S.	NA	MC-S	2C
A509	Silver cyanide	506-64-9	SM-3	2B
A512	Sodium cyanide	143-33-9	SM-2	2B
A516	Sodium pentachlorophenate	131-52-2	SM-1	2B
A519	Strychnine salts	NA	MC-S	2C
A524	Tars, polycyclic aromatic hydrocarbons [PAHs]	130498-29-2	MC-C	2C
A528	Tetrachlorobenzenes [Tetrachlorobenzenes, isomers not specified]	NA	MC-I	2C
A529	Tetrachlorodibenzo-p-dioxins [TCDDs]	41903-57-5	MC-I	2C
A531	Tetrachlorodibenzofurans [TCDFs]	30402-14-3	MC-I	2C
A533	Tetrachloroethanes, N.O.S. [Tetrachloroethanes, isomers not specified]	25322-20-7	MC-I	2C
A538	2,3,4,6-Tetrachlorophenol, potassium salt	53535-27-6	SM-1	2B
A539	2,3,4,6-Tetrachlorophenol, sodium salt	25567-55-9	SM-1	2B
A540	Tetrachlorophenols [Tetrachlorophenols, isomers not specified]	NA	MC-I	2C
A541	Tetrachlorophenols and their chlorophenoxy derivative acids, esters, ethers, amine and other salts	NA	MC-S	2C
A542	Tetraethyl lead	78-00-2	SM-1	2B
A543	Tetraethyl pyrophosphate	107-49-3	D-H*	2A
A546	Tetra-, penta- and hexachlorodibenzo-p-dioxins	NA	MC-C	2C
A547	Tetra-, penta- and hexachlorodibenzofurans	NA	MC-C	2C
A548	Tetra-, penta-, hepta- and hexachlorodibenzo-p-dioxins	NA	MC-C	2C
A549	Tetra-, penta-, hepta- and hexachlorodibenzofurans	NA	MC-C	2C
A550	Thallic oxide	1314-32-5	SM-1	2B
A552	Thallium (I) acetate	563-68-8	SM-1	2B
A553	Thallium (I) carbonate	6533-73-9	SM-1	2B
A554	Thallium (I) chloride	7791-12-0	SM-1	2B
A555	Thallium compounds, N.O.S.	NA	MC-S	2C
A556	Thallium (I) nitrate	10102-45-1	SM-1	2B
A557	Thallium selenite [Selenious acid, dithallium(1+) salt]	12039-52-0	SM-2	2B
A558	Thallium (I) sulfate	7446-18-6	SM-1	2B
A574	Toluene diisocyanate, mixed isomers [2,4- and 2,6-Toluene diisocyanate mixture]	26471-62-5	MC-I	2C
A575	Toluenediamine [Toluenediamine, isomers not specified]	25376-45-8	MC-I	2C
A581	o-Toluidine hydrochloride	636-21-5	SM-1	2B
A586	Trichlorobenzenes [Trichlorobenzene, mixed isomers]	12002-48-1	MC-I	2C
A587	Trichloroethane [Trichloroethane, isomers not specified]	25323-89-1	MC-I	2C
A595	Trichlorophenols [Trichlorophenols, isomers not specified]	NA	MC-I	2C
A596	Trichlorophenols and their chlorophenoxy derivative acids, esters, ethers, amine and other salts	NA	MC-S	2C
A598	Trichloropropane [Trichloropropane, isomers not specified]	25735-29-9	MC-I	2C
A607	Uracil mustard	66-75-1	D-H*, R	2A
A609	Vanadium pentoxide	1314-62-1	SM-1	2B
A614	Warfarin salts, when present at concentrations less than 0.3%	NA	MC-S	2C
A615	Warfarin salts, when present at concentrations greater than 0.3%	NA	MC-S	2C
A616	Warfarin salts	NA	MC-S	2C
A617	Xylenes, mixed isomers [Xyenes, total]	1330-20-7	MC-I	2C
A622	Zinc cyanide	557-21-1	SM-3	2B
A623	Zinc phosphide	1314-84-7	D-R	2A
A624	Zinc phosphide, when present at concentrations greater than 10%	1314-84-7	D-R	2A

Table 2 - Chemical Entries Removed from the Master List
(See Tables 2A, 2B and 2C for Details)

Sort #	Chemical Name [Alternate Names]	CASRN	Type	Table 2
A625	Zinc phosphide, when present at concentrations of 10% or less	1314-84-7	D-R	2A

Table 2 - Notes

Type The codes used to describe the Type of Chemical Entry are described in Table 1 - Format Notes

2A This indicates that further information on this chemical can be found in: Table 2A - Chemicals Not Reasonably Expected to be Found in Wastes That are not Included on Exemption Chemicals List

2B This indicates that further information on this chemical can be found in: Table 2B - Chemicals that are Directly Represented by Other Chemicals on the Master List

2C This indicates that further information on this chemical can be found in: Table 2C - Chemical Entries on the Master List that are "N.O.S."/Multi-Chemical and Their Representative Chemicals on the Master List

Table 2A - Chemicals Not Reasonably Expected to be Found in Wastes That are not Included on Exemption Chemicals List

Sort #	Chemical Name [Alternate Names]	CASRN	Basis for Not Including on the Exemption Chemicals List	Ref
A010	Acetyl chloride	75-36-5	Reacts violently with water, alcohol, DMSO, oxidizing agents and strong bases	a
A011	1-Acetyl-2-thiourea	591-08-2	Has been shown to hydrolyze relatively rapidly in water at pH 9.65 (half-life 2.7 hr)	p
A016	Aflatoxins	1402-68-2	Naturally occurring food contaminant produced by fungi; manufactured only as a research chemical; (Not expected to be found in industrial wastes)	o
A022	Aluminum phosphide	20859-73-8	Reactive in moist air producing phosphine	b
A049	Benzal chloride [Benzyl dichloride] [Dichloromethylbenzene]	98-87-3	Incompatible with strong oxidizers and strong bases; readily hydrolyzes under acid or alkaline conditions	q
A060	Benzotrichloride [Benzoic trichloride]	98-07-7	Hydrolyzes in the presence of moisture	a
A085	Carbon oxyfluoride [Carbonyl fluoride]	353-50-4	Instantly hydrolyzed by water	b
A088	Chloral [Trichloroacetaldehyde]	75-87-6	Reacts with water to form chloral hydrate	a,c
A108	2-Chloroethyl vinyl ether	110-75-8	Dilute acids produce hydrolysis to acetaldehyde and ethylene chlorohydrin	b
A113	Chloromethyl methyl ether	107-30-2	Hydrolyzes in water	d
A146	Cyanogen	460-19-5	Gas at STP	b
A147	Cyanogen bromide	506-68-3	Decomposes rapidly and tends to explode	i
A148	Cyanogen chloride	506-77-4	Gas at STP; >13.8°C	b
A214	N,N'-Diethylhydrazine	1615-80-1	Hydrolysis	e
A220	Diisopropylfluorophosphate [DFP]	55-91-4	Forms hydrogen fluoride in the presence of moisture	a
A227	Dimethylbenzyl hydroperoxide [Cumene hydroperoxide]	80-15-9	Strong oxidizing agent; spontaneous chemical reaction, ignition and/or explosion may occur	n
A228	Dimethylcarbamoyl chloride	79-44-7	Hydrolyzes rapidly	a
A229	1,1-Dimethylhydrazine [UDMH]	57-14-7	Hygroscopic; fumes in air	b
A230	1,2-Dimethylhydrazine	540-73-8	Hygroscopic; fumes in air	b
A272	Ethyleneimine [Aziridine]	151-56-4	Hydrolyzes in water	h
A286	Fluorine	7782-41-4	Reactive gas at STP	b
A294	Glycidylaldehyde [Oxiranecarboxaldehyde]	765-34-4	Hydrolyzes	a
A326	Hydrazine	302-01-2	Fumes in air; severe explosion hazard	a,b
A346	Maleic anhydride	108-31-6	Hydrolyzes	b
A362	Methyl chlorocarbonate	79-22-1	Slightly soluble in water and decomposed by it	b
A368	Methyl ethyl ketone peroxide	1338-23-4	Strong oxidizing agent; spontaneous chemical reaction, ignition and/or explosion may occur	j
A369	Methyl hydrazine	60-34-4	Has a half-life of less than 2 days	l
A371	Methyl isocyanate [Isocyanic acid, methyl ester]	624-83-9	Hydrolyzes rapidly	g
A376	N-Methyl-N'-nitro-N-nitroso-guanidine [MNNG]	70-25-7	Hydrolyzes, reactive in water	a
A382	Mitomycin C	50-07-7	Biologically derived antineoplastic, cancer research drug; sensitive to prolonged exposure to light and air; Solutions of this chemical in water should be stable for 24 hours; (Not expected to found in industrial wastes)	n
A384	Mustard "gas"	505-60-2	Does not easily go into water & breaks down quickly	k
A396	Nitric oxide	10102-43-9	Gas at STP; reacts with oxygen to give NO_2	b
A401	Nitrogen dioxide	10102-44-0	Gas at STP	b
A402	Nitrogen mustard [Mechlorethamine]	51-75-2	Reactive in water	b
A403	Nitrogen mustard, HCl salt [Mechlorethamine, HCl salt]	55-86-7	Reactive in water; similar in structure to mustard gas	a
A404	Nitrogen mustard N-Oxide [Mechlorethamine oxide]	126-85-2	Reactive in water	e
A405	Nitrogen mustard N-Oxide, HCl [Mechlorethamine oxide, HCl]	302-70-5	Reactive in water	a
A462	Phosgene	75-44-5	Reactive gas at STP; soluble in water and slowly hydrolyzed by it	a
A463	Phosphine	7803-51-2	Gas; spontaneously flammable	a
A465	Phosphorus sulfide	1314-80-3	Dangerous fire risk; ignites by friction	a
A469	Phthalic anhydride	85-44-9	Hydrolyzes in water	b
A543	Tetraethyl pyrophosphate	107-49-3	Hygroscopic; quickly hydrolyzed by water	b
A607	Uracil mustard	66-75-1	Hydrolyzes, reactive in water	b
A623	Zinc phosphide	1314-84-7	Reacts violently with acids with degradation	b
A624	Zinc phosphide, conc greater than 10%	1314-84-7	Reacts violently with acids with degradation	b
A625	Zinc phosphide, conc of 10% or less	1314-84-7	Reacts violently with acids with degradation	b

Table 2A Notes

References for the Basis for Not Including the Table 2A on Exemption Chemicals List

a) N. Irving Sax and Richard J. Lewis, Sr, Hawley's Condensed Chemical Dictionary (New York: van Nostrand Reinhold,1987).
b) Susan Budavari(editor), The Merck Index (New Jersey:Merck and Co., Inc.,1989).
c) NTP Chemical Repository Fact Sheet; http://ntp-db.niehs.nih.gov/NTP_Reports/NTP_Chem_H&S/NTP_Chem9
d) TRI Chemical Fact Sheet; http://mail.odsnet.com/TRIFACTS/32.html
e) Karl Versehueren, Handbook of Environmental Data on Organic Chemicals (New York: van Nostrand Reinhold, 1996).
f) Hazardous Substance Data Bank
g) Kirk-Othmer, Encyclopedia of Chemical Technology (John Wiley & Sons, 1981)
h) Philip H. Howard et al., Handbook of Environmental Degradation Rates (Chelsea, Michigan, 1991)
i) NTP Chemical Repository Fact Sheet; http://ntp-db.niehs.nih.gov/NTP_Reports/NTP_Chem_H&S/NTP_Chem5/Radian506-68-3.txt
j) NTP Chemical Repository Fact Sheet; http://ntp-db.niehs.nih.gov/NTP_Reports/NTP_Chem_H&S/NTP_Chem1/Radian1338-23-4.txt
k) ATSDR ToxFAQs; http://www.atsdr.cdc.gov/tfacts49.html
l) TRI Chemical Fact Sheet; http://mail.odsnet.com/TRIFacts/169.html
m) NTP Chemical Repository Fact Sheet; http://ntp-db.niehs.nih.gov/NTP_Reports/NTP_Chem_H&S/NTP_Chem8/Radian80-15-9.txt
n) NTP Chemical Repository Fact Sheet; http://ntp-db.niehs.nih.gov/NTP_Reports/NTP_Chem_H&S/NTP_Chem5/Radian50-07-7.txt
o) NTP's 8th annual Report on Carcinogens; http://ehis.niehs.nih.gov/roc/eighth/chemicals/aflato.pdf
p) Spectrum Laboratory Chemical Fact Sheet; http://www.speclab.com/compound/c591082.htm
q) NTP Chemical Repository Fact Sheet; http://ntp-db.niehs.nih.gov/NTP_Reports/NTP_Chem_H&S/NTP_Chem9/Radian98-87-3.txt

Table 2A-1 - Additional Hydrolysis Data for Some of the Chemicals in Table 2A

Sort #	Chemical Name [Alternate Names]	CASRN	Hydrolysis Rates - Half Life in Various Media			
			Soil	Air	Surface Water	Ground Water
A060	Benzotrichloride [Benzoic trichloride]	98-07-7		48 hr	H: 3 min L: 11 sec	
A108	2-Chloroethyl vinyl ether	110-75-8		30 min	4x 10 -6 hr	
A113	Chloromethyl methyl ether	107-30-2			H: 0.033 hr L: 0.0108 hr	H: 22.7 hr L: 227 hr
A228	Dimethylcarbamoyl chloride	79-44-7			H: 195 sec L: 14 sec	
A229	1,1-Dimethylhydrazine [UDMH]	57-14-7	H: 528 hr L: 192 hr	H: 7.7 hr L: 0.8 hr	H: 528 hr L: 192 hr	H: 1056 hr L: 384 hr
A230	1,2-Dimethylhydrazine	540-73-8		H: 5.2 hr L: 0.5 hr	H: 672 hr L: 168 hr	H: 8640 hr L: 336 hr
A272	Ethyleneimine [Aziridine]	151-56-4		H: 105 hr L: 10.5 hr	H: 672 hr L: 168 hr	H: 8640 hr L: 336 hr
A294	Glycidylaldehyde [Oxiranecarboxaldehyde]	765-34-4		H: 30 hr L: 3 hr	H: 672 hr L: 168 hr	H: 8640 hr L: 336 hr
A346	Maleic anhydride	108-31-6		1.7 hr	0.31 hr	
A371	Methyl isocyanate [Isocyanic acid, methyl ester]	624-83-9		H: 18.6 hr L: 1.86 hr	H: 0.326 hr L: 0.144 hr	H: 0.326 hr L: 0.144 hr
A376	N-Methyl-N'-nitro-N-nitroso-guanidine [MNNG]	70-25-7		H: 10.4 hr L: 1.04 hr	H: 26 hr L: 0.71 hr	H: 26 hr L: 0.71 hr
A462	Phosgene	75-44-5	H: 1 hr L: 0.05 hr	113 yr	H: 1 hr L: 0.05 hr	H: 1 hr L: 0.05 hr
A469	Phthalic anhydride	85-44-9		1 day	H: L: 1.5 min	
A543	Tetraethyl pyrophosphate	107-49-3			H: L: 7 hr	
A607	Uracil mustard	66-75-1		H: 2.9 hr L: 0.29 hr	H: 24 hr L: 0.5 hr	H: 24 hr L: 0.5 hr

Table 2A-1 Notes

1) Hydrolysis rates were obtained from the following references:
   a) Howard, Philip H.; Handbook of Environmental Degradation Rates; Lewis Publishers; Michigan, 1991
   b) Mackay, Donald; Illustrated Handbook of Physical-Chemical Properties and Environmental Fate for Organic Chemicals; Lewis Publishers, 1992
   c) Verschueren, Karel; Handbook of Environmental Data on Organic Chemicals; Van Nostrand Rheinhold; New York, 1996

2) Those values preceded with an H: represent the highest hydrolysis rate in the referenced literature.

3) Those values preceded with an L: represent the lowest hydrolysis rate in the referenced literature.

4) Temperatures, where reported, ranged from 5°C and 25°C. This accounted for some of the differences in hydrolysis rates.

5) Where reported, the pH was indicated as being pH = 7.

Table 2B - Chemicals that are Directly Represented by Other Chemicals on the Master List

Sort #	Chemical Name on Table 1 [Alternate Names]	CASRN	Sort #	Representative Chemical(s) on Table 1 [Alternate Names]	CASRN
A028	Ammonium vanadate [Vanadic acid, ammonium salt]	7803-55-6	A608	Vanadium [Vanadium, total]	7440-62-2
A035	Arsenic acid	7778-39-4	A034	Arsenic [Arsenic, total]	7440-38-2
A037	Arsenic pentoxide	1303-28-2	A034	Arsenic [Arsenic, total]	7440-38-2
A038	Arsenic trioxide	1327-53-3	A034	Arsenic [Arsenic, total]	7440-38-2
A044	Barium cyanide	542-62-1	A042	Barium [Barium, total]	7440-39-3
			A142	Cyanides, amenable	57-12-5
			A145	Cyanides, total	57-12-5
A052	Benzenearsonic acid	98-05-5	A034	Arsenic [Arsenic, total]	7440-38-2
A065	Beryllium powder	7440-41-7	A063	Beryllium [Beryllium, total]	7440-41-7
A075	Cacodylic acid	75-60-5	A034	Arsenic [Arsenic, total]	7440-38-2
A078	Calcium chromate	13765-19-0	A121	Chromium [Chromium, total]	7440-47-3
A079	Calcium cyanide	592-01-8	A142	Cyanides, amenable	57-12-5
			A145	Cyanides, total	57-12-5
A122	Chromium VI [Hexavalent chromium]	18540-29-9	A121	Chromium [Chromium, total]	7440-47-3
A129	Copper cyanide	544-92-3	A128	Copper [Copper, total]	7440-50-8
			A142	Cyanides, amenable	57-12-5
			A145	Cyanides, total	57-12-5
A199	Dichlorophenylarsine	696-28-6	A034	Arsenic [Arsenic, total]	7440-38-2
A212	Diethylarsine	692-42-2	A034	Arsenic [Arsenic, total]	7440-38-2
A327	Hydrogen cyanide [HCN] [Hydrocyanic acid]	74-90-8	A142	Cyanides, amenable	57-12-5
			A145	Cyanides, total	57-12-5
A328	Hydrogen fluoride [HF] [Hydrofluoric acid]	7664-39-3	A285	Fluoride	16984-48-8
A329	Hydrogen sulfide	7783-06-4	A522	Sulfide	18496-25-8
A341	Lead acetate	301-04-2	A340	Lead [Lead,total]	7439-92-1
A343	Lead phosphate	7446-27-7	A340	Lead [Lead,total]	7439-92-1
A344	Lead subacetate	1335-32-6	A340	Lead [Lead,total]	7439-92-1
A351	Mercury, elemental	7439-97-6	A352	Mercury [Mercury, total]	7439-97-6
A354	Mercury fulminate	628-86-4	A352	Mercury [Mercury, total]	7439-97-6
A391	Nickel carbonyl	13463-39-3	A390	Nickel [Nickel, total]	7440-02-0
A393	Nickel cyanide	557-19-7	A390	Nickel [Nickel, total]	7440-02-0
			A142	Cyanides, amenable	57-12-5
			A145	Cyanides, total	57-12-5
A432	Osmium tetroxide [Osmic acid]	20816-12-0	A433	Osmium	7440-04-2
A459	Phenyl mercury acetate [Phenyl mercuric acetate]	62-38-4	A352	Mercury [Mercury, total]	7439-97-6
A475	Potassium cyanide	151-50-8	A142	Cyanides, amenable	57-12-5
			A145	Cyanides, total	57-12-5
A479	Potassium pentachlorophenate [Pentachlorophenol,potassium salt]	7978-73-6	A446	Pentachlorophenol [PCP]	87-86-5
A480	Potassium silver cyanide	506-61-6	A507	Silver [Silver, total]	7440-22-4
			A142	Cyanides, amenable	57-12-5
			A145	Cyanides, total	57-12-5
A503	Selenious acid [Selenium dioxide, hydrated]	7783-00-8	A501	Selenium [Selenium, total]	7782-49-2
A504	Selenium sulfide [Selenium (IV) disulfide]	7488-56-4	A501	Selenium [Selenium, total]	7782-49-2
			A522	Sulfide	18496-25-8
A506	Selenourea	630-10-4	A501	Selenium [Selenium, total]	7782-49-2

Table 2B - Chemicals that are Directly Represented by Other Chemicals on the Master List

Sort #	Chemical Name on Table 1 [Alternate Names]	CASRN	Sort #	Representative Chemical(s) on Table 1 [Alternate Names]	CASRN
A509	Silver cyanide	506-64-9	A507	Silver [Silver, total]	7440-22-4
			A142	Cyanides, amenable	57-12-5
			A145	Cyanides, total	57-12-5
A512	Sodium cyanide	143-33-9	A142	Cyanides, amenable	57-12-5
			A145	Cyanides, total	57-12-5
A516	Sodium pentachlorophenate	131-52-2	A446	Pentachlorophenol [PCP]	87-86-5
A538	2,3,4,6-Tetrachlorophenol, potassium salt	53535-27-6	A537	2,3,4,6-Tetrachlorophenol	58-90-2
A539	2,3,4,6-Tetrachlorophenol, sodium salt	25567-55-9	A537	2,3,4,6-Tetrachlorophenol	58-90-2
A542	Tetraethyl lead	78-00-2	A340	Lead [Lead,total]	7439-92-1
A550	Thallic oxide	1314-32-5	A551	Thallium [Thallium, total]	7440-28-0
A552	Thallium (I) acetate	563-68-8	A551	Thallium [Thallium, total]	7440-28-0
A553	Thallium (I) carbonate	6533-73-9	A551	Thallium [Thallium, total]	7440-28-0
A554	Thallium (I) chloride	7791-12-0	A551	Thallium [Thallium, total]	7440-28-0
A556	Thallium (I) nitrate	10102-45-1	A551	Thallium [Thallium, total]	7440-28-0
A557	Thallium selenite [Selenious acid, dithallium(1+) salt]	12039-52-0	A551	Thallium [Thallium, total]	7440-28-0
			A501	Selenium [Selenium, total]	7782-49-2
A558	Thallium (I) sulfate	7446-18-6	A551	Thallium [Thallium, total]	7440-28-0
A581	o-Toluidine hydrochloride	636-21-5	A579	o-Toluidine [2-Methylaniline]	95-53-4
A609	Vanadium pentoxide	1314-62-1	A608	Vanadium [Vanadium, total]	7440-62-2
A622	Zinc cyanide	557-21-1	A621	Zinc [Zinc,total]	7440-66-6
			A142	Cyanides, amenable	57-12-5
			A145	Cyanides, total	57-12-5

Table 2C - Chemical Entries on the Master List that are "N.O.S."/Multi-Chemical and Their Representative Chemicals on the Master List

Sort #	N.O.S./Multiple-Chemical Entry on Table 1	CASRN	Sort #	Representative Chemical(s) Listed on Table 1	CASRN
A001	All constituents for which treatment standards are specified for multi-source leachate - F039	NA	NA	F039 constituents are marked in column 11 of Table 1 - Master List	NA
A032	Antimony compounds, N.O.S.	NA	A031	Antimony [Antimony, total]	7440-36-0
A036	Arsenic compounds, N.O.S.	NA	A034	Arsenic [Arsenic, total]	7440-38-2
A043	Barium compounds, N.O.S.	NA	A042	Barium [Barium, total]	7440-39-3
A064	Beryllium compounds, N.O.S.	NA	A063	Beryllium [Beryllium, total]	7440-41-7
A077	Cadmium compounds, N.O.S.	NA	A076	Cadmium [Cadmium, total]	7440-43-9
A123	Chromium compounds, N.O.S.	NA	A121	Chromium [Chromium, total]	7440-47-3
A342	Lead compounds, N.O.S.	NA	A340	Lead [Lead,total]	7439-92-1
A353	Mercury compounds, N.O.S.	NA	A352	Mercury [Mercury, total]	7439-97-6
A392	Nickel compounds, N.O.S.	NA	A390	Nickel [Nickel, total]	7440-02-0
A502	Selenium compounds, N.O.S.	NA	A501	Selenium [Selenium, total]	7782-49-2
A508	Silver compounds, N.O.S.	NA	A507	Silver [Silver, total]	7440-22-4
A555	Thallium compounds, N.O.S.	NA	A551	Thallium [Thallium, total]	7440-28-0
A139	Cyanide	57-12-5	A142	Cyanides, amenable	57-12-5
			A145	Cyanides, total	57-12-5
A140	Cyanide, complexed [Cyanide (complexes)]	NA	A142	Cyanides, amenable	57-12-5
			A145	Cyanides, total	57-12-5
A141	Cyanide, salts	NA	A142	Cyanides, amenable	57-12-5
			A145	Cyanides, total	57-12-5
A143	Cyanides, soluble cyanide salts, N.O.S.	NA	A142	Cyanides, amenable	57-12-5
			A145	Cyanides, total	57-12-5
A144	Cyanides, soluble salts and complexes, N.O.S.	NA	A142	Cyanides, amenable	57-12-5
			A145	Cyanides, total	57-12-5
A094	Chlorinated fluorocarbons, N.O.S.	NA	A188	Dichlorodifluoromethane [CFC-12]	75-71-8
			A591	Trichlorofluoromethane] [CFC-11]	75-69-4
			A600	1,1,2-Trichloro-1,2,2-trifluoroethane [Freon 113]	76-13-1
A295	Halomethanes, N.O.S.	NA	A111	Chloromethane [Methyl chloride]	74-87-3
			A366	Methylene chloride [Dichloromethane]	75-09-2
			A109	Chloroform [Trichloromethane]	67-66-3
			A086	Carbon tetrachloride	56-23-5
			A069	Bromomethane [Methyl bromide]	74-83-9
			A365	Methylene bromide [Dibromomethane]	74-95-3
			A068	Bromoform [Tribromomethane]	75-25-2
			A331	Iodomethane [Methyl iodide]	74-88-4
			A177	Dibromochloromethane [Chlorodibromomethane]	124-48-1
			A067	Bromodichloromethane [Dichlorobromomethane]	75-27-4
			A188	Dichlorodifluoromethane [CFC-12]	75-71-8
			A591	Trichlorofluoromethane] [CFC-11]	75-69-4

Table 2C - Chemical Entries on the Master List that are "N.O.S."/Multi-Chemical and Their Representative Chemicals on the Master List

Sort #	N.O.S./Multiple-Chemical Entry on Table 1	CASRN	Sort #	Representative Chemical(s) Listed on Table 1	CASRN
A093	Chlorinated ethane, N.O.S.	68411-72-3	A104	Chloroethane [Ethyl chloride]	75-00-3
			A189	1,1-Dichloroethane [Ethylidene dichloride]	75-34-3
			A190	1,2-Dichloroethane [Ethylene dichloride]	107-06-2
			A588	1,1,1-Trichloroethane [Methyl chloroform]	71-55-6
			A589	1,1,2-Trichloroethane [Vinyl trichloride]	79-00-5
			A534	1,1,1,2-Tetrachloroethane	630-20-6
			A535	1,1,2,2-Tetrachloroethane	79-34-5
			A444	Pentachloroethane	76-01-7
			A321	Hexachloroethane	67-72-1
A587	Trichloroethane [Trichloroethane, isomers not specified]	25323-89-1	A588	1,1,1-Trichloroethane [Methyl chloroform]	71-55-6
			A589	1,1,2-Trichloroethane [Vinyl trichloride]	79-00-5
A533	Tetrachloroethanes, N.O.S. [Tetrachloroethanes, isomers not specified]	25322-20-7	A534	1,1,1,2-Tetrachloroethane	630-20-6
			A535	1,1,2,2-Tetrachloroethane	79-34-5
A200	Dichloropropane, N.O.S. [Dichloropropane, isomers not specified]	26638-19-7	A201	1,1-Dichloropropane [Propylidene chloride]	78-99-9
			A202	1,2-Dichloropropane [Propylene dichloride]	78-87-5
A598	Trichloropropane [Trichloropropane, isomers not specified]	25735-29-9	A599	1,2,3-Trichloropropane	96-18-4
A191	Dichloroethylene, N.O.S.	25323-30-2	A192	1,1-Dichloroethylene [Vinylidene chloride]	75-35-4
			A194	cis-1,2-Dichloroethylene	156-59-2
			A195	trans-1,2-Dichloroethylene	156-60-5
A193	1,2-Dichloroethylene, mixed isomers	540-59-0	A194	cis-1,2-Dichloroethylene	156-59-2
			A195	trans-1,2-Dichloroethylene	156-60-5
A206	Dichloropropene, N.O.S.	NA	A205	Dichloropropene [Dichloropropylene] [Dichloro-1-Propene]	26952-23-8
			A208	cis-1,3-Dichloropropene [cis-1,3-Dichloropropylene]	10061-01-5
			A209	trans-1,3-Dichloropropene [trans-1,3-Dichloropropylene]	10061-02-6
A207	1,3-Dichloropropene [1,3-Dichloropropylene, isomers not specified]	542-75-6	A208	cis-1,3-Dichloropropene [cis-1,3-Dichloropropylene]	10061-01-5
			A209	trans-1,3-Dichloropropene [trans-1,3-Dichloropropylene]	10061-02-6
A185	1,4-Dichloro-2-butene, mixed isomers	764-41-0	A186	cis-1,4-dichloro-2-butene	1476-11-5
			A187	trans-1-4-Dichloro-2-butene	110-57-6
A092	Chlorinated benzenes, N.O.S.	68411-45-0	A101	Chlorobenzene [Monochlorobenzene]	108-90-7
			A181	1,2-Dichlorobenzene [o-Dichlorobenzene]	95-50-1
			A182	1,3-Dichlorobenzene [m-Dichlorobenzene]	541-73-1
			A183	1,4-Dichlorobenzene [p-Dichlorobenzene]	106-46-7
			A585	1,2,4-Trichlorobenzene	120-82-1
			A527	1,2,4,5-Tetrachlorobenzene	95-94-3
			A438	Pentachlorobenzene	608-93-5
			A304	Hexachlorobenzene	118-74-1
A180	Dichlorobenzenes [Dichlorobenzene, mixed isomers]	25321-22-6	A181	1,2-Dichlorobenzene [o-Dichlorobenzene]	95-50-1
			A182	1,3-Dichlorobenzene [m-Dichlorobenzene]	541-73-1
			A183	1,4-Dichlorobenzene [p-Dichlorobenzene]	106-46-7
A586	Trichlorobenzenes [Trichlorobenzene, mixed isomers]	12002-48-1	A585	1,2,4-Trichlorobenzene	120-82-1
A528	Tetrachlorobenzenes [Tetrachlorobenzenes, isomers not specified]	NA	A527	1,2,4,5-Tetrachlorobenzene	95-94-3

Table 2C - Chemical Entries on the Master List that are "N.O.S."/Multi-Chemical and Their Representative Chemicals on the Master List

Sort #	N.O.S./Multiple-Chemical Entry on Table 1	CASRN	Sort #	Representative Chemical(s) Listed on Table 1	CASRN
A095	Chlorinated naphthalene, N.O.S.	70776-03-3	A114	2-Chloronaphthalene [beta-Chloronaphthalene]	91-58-7
A203	Dichloropropanol, N.O.S. [Dichloropropanols, isomers not specified]	NA	A204	1,3-Dichloropropanol	26545-73-3
A105	Chloroethers	NA	A116	4-Chlorophenyl phenyl ether [p-Chlorodiphenyl ether]	7005-72-3
			A112	bis-(Chloromethyl) ether [Dichloromethyl ether]	542-88-1
			A107	bis-(2-Chloroethyl) ether [Dichloroethyl ether] [1,1'-Oxybis(2-chloroethane)]	111-44-4
			A110	bis-(2-Chloroisopropyl) ether [2,2'-Oxybis(1-chloropropane)] [Bis-(2-Chloro-1-methylethyl) ether]	108-60-1
			A196	2,2'-Dichloroisopropyl ether [2,2'-Oxybis(2-chloropropane)]	39638-32-9
			A263	2-Ethoxyethanol [Ethylene glycol monoethyl ether] [Cellosolve]	110-80-5
A099	Chloroalkyl ethers, N.O.S.	NA	A112	bis-(Chloromethyl) ether [Dichloromethyl ether]	542-88-1
			A107	bis-(2-Chloroethyl) ether [Dichloroethyl ether] [1,1'-Oxybis(2-chloroethane)]	111-44-4
			A110	bis-(2-Chloroisopropyl) ether [2,2'-Oxybis(1-chloropropane)] [Bis-(2-Chloro-1-methylethyl) ether]	108-60-1
			A196	2,2'-Dichloroisopropyl ether [2,2'-Oxybis(2-chloropropane)]	39638-32-9
			A263	2-Ethoxyethanol [Ethylene glycol monoethyl ether] [Cellosolve]	110-80-5
A096	Chlorinated phenol, N.O.S.	1336-35-2	A103	p-Chloro-m-cresol	59-50-7
			A115	2-Chlorophenol [o-Chlorophenol]	95-57-8
			A197	2,4-Dichlorophenol	120-83-2
			A198	2,6-Dichlorophenol	87-65-0
			A593	2,4,5,-Trichlorophenol	95-95-4
			A594	2,4,6-Trichlorophenol	88-06-2
			A537	2,3,4,6-Tetrachlorophenol	58-90-2
			A446	Pentachlorophenol [PCP]	87-86-5
A595	Trichlorophenols [Trichlorophenols, isomers not specified]	NA	A593	2,4,5,-Trichlorophenol	95-95-4
			A594	2,4,6-Trichlorophenol	88-06-2
A596	Trichlorophenols and their chlorophenoxy derivative acids, esters, ethers, amine and other salts	NA	A593	2,4,5-Trichlorophenol	95-95-4
			A594	2,4,6-Trichlorophenol	88-06-2
			A597	2,4,5-Trichlorophenoxyacetic acid [2,4,5,-T]	93-76-5
			A510	Silvex [2,4,5-Trichlorophenoxypropionic acid] [2,4,5-TP]	93-72-1
A540	Tetrachlorophenols [Tetrachlorophenols, isomers not specified]	NA	A537	2,3,4,6-Tetrachlorophenol	58-90-2
A541	Tetrachlorophenols and their chlorophenoxy derivative acids, esters, ethers, amine and other salts	NA	A537	2,3,4,6-Tetrachlorophenol	58-90-2
A447	Pentachlorophenol and its' chlorophenoxy derivative acids, esters, ethers, amine and other salts	NA	A446	Pentachlorophenol [PCP]	87-86-5
A473	Polychlorinated dibenzo-p-dioxins [PCDDs]	NA		See all entries under Tetra-, Penta-, Hexa- & Hepta- Chlorodibenzo-p-dioxins	NA
			A429	Octachlorodibenzo-p-dioxin [OCDD]	3268-87-9
A548	Tetra-, penta-, hepta- and hexachlorodibenzo-p-dioxins	NA		See all entries under Tetra-, Penta-, Hexa- & Hepta- Chlorodibenzo-p-dioxins	NA
A546	Tetra-, penta- and hexachlorodibenzo-p-dioxins	NA		See all entries under Tetra-, Penta- & Hexa- Chlorodibenzo-p-dioxins	NA
A529	Tetrachlorodibenzo-p-dioxins [TCDDs]	41903-57-5	A530	2,3,7,8-Tetrachlorodibenzo-p-dioxin [2,3,7,8-TCDD]	1746-01-6
A439	Pentachlorodibenzo-p-dioxins [PeCDDs]	36088-22-9	A440	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4
A312	Hexachlorodibenzo-p-dioxins [HxCDDs]	34465-46-8	A313	1,2,3,4,7,8 Hexachlorodibenzo-p-dioxin	39227-28-6

Table 2C - Chemical Entries on the Master List that are "N.O.S."/Multi-Chemical and Their Representative Chemicals on the Master List

Sort #	N.O.S./Multiple-Chemical Entry on Table 1	CASRN	Sort #	Representative Chemical(s) Listed on Table 1	CASRN
			A314	1,2,3,6,7,8 Hexachlorodibenzo-p-dioxin	57653-85-7
			A315	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3
A299	Heptachlorodibenzo-p-dioxins	37871-00-4	A300	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9
A474	Polychlorinated dibenzofurans [PCDFs]	136677-10-6		See all entries under Tetra-, Penta-, Hexa- & Hepta- Chlorodibenzofurans	NA
			A430	Octachlorodibenzofuran [OCDF]	39001-02-0
A549	Tetra-, penta-, hepta- and hexachlorodibenzofurans	NA		See all entries under Tetra-, Penta-, Hexa- & Hepta- Chlorodibenzofurans	NA
A547	Tetra-, penta- and hexachlorodibenzofurans	NA		See all entries under Tetra-, Penta- & Hexa- Chlorodibenzofurans	NA
A531	Tetrachlorodibenzofurans [TCDFs]	30402-14-3	A532	2,3,7,8-Tetrachlorodibenzofuran [2,3,7,8-TCDF]	51207-31-9
A441	Pentachlorodibenzofurans [PeCDFs]	30402-15-4	A442	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6
			A443	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4
A316	Hexachlorodibenzofurans [HxCDFs]	55684-94-1	A317	1,2,3,4,7,8 Hexachlorodibenzofuran	70648-26-9
			A318	1,2,3,6,7,8 Hexachlorodibenzofuran	57117-44-9
			A319	1,2,3,7,8,9 Hexachlorodibenzofuran	72918-21-9
			A320	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5
A301	Heptachlorodibenzofurans	38998-75-3	A302	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4
			A303	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7
A090	Chlordane [Chlordane, commercial mixture]	12789-03-6	A091	Chlordane [Chlordane, alpha and gamma isomers]	57-74-9
A156	2,4-D salts and esters [2,4-Dichlorophenoxyacetic acid salts and esters]	NA	A155	2,4-D [2,4-Dichlorophenoxyacetic acid]	94-75-7
A159	DDD [DDD, commercial mixture]	72-54-8	A160	o,p'-DDD	53-19-0
			A161	p,p'-DDD	72-54-8
A162	DDE [DDE, commercial mixture]	72-55-9	A163	o,p'-DDE [o,p' TDE]	3424-82-6
			A164	p,p'-DDE [p,p'-TDE]	72-55-9
A165	DDT [DDT, commercial mixture]	50-29-3	A166	o,p'-DDT	789-02-6
			A167	p,p'-DDT	50-29-3
A252	Endosulfan [Endosulfan, isomers not specified]	115-29-7	A253	Endosulfan I [alpha-Endosulfan]	959-98-8
			A254	Endosulfan II [beta-Endosulfan]	33213-65-9
A260	Endrin metabolites	NA	A258	Endrin aldehyde	7421-93-4
			A259	Endrin ketone	53494-70-5
A297	Heptachlor epoxide [Heptachlor epoxide, isomers not specified]	1024-57-3	A298	Heptachlor epoxide, alpha, beta, and gamma isomers	1024-57-3
A345	Lindane [Lindane, commercial mixture - mostly gamma-BHC]	58-89-9	A307	alpha-Hexachlorocyclohexane [alpha-BHC]	319-84-6
			A308	beta-Hexachlorocyclohexane [beta-BHC]	319-85-7
			A309	delta-Hexachlorocyclohexane [delta-BHC]	319-86-8
			A310	gamma-Hexachlorocyclohexane [gamma-BHC] [Lindane]	58-89-9
A306	Hexachlorocyclohexane [Hexachlorocyclohexane, isomers not specified]	NA	A307	alpha-Hexachlorocyclohexane [alpha-BHC]	319-84-6
			A308	beta-Hexachlorocyclohexane [beta-BHC]	319-85-7
			A309	delta-Hexachlorocyclohexane [delta-BHC]	319-86-8
			A310	gamma-Hexachlorocyclohexane [gamma-BHC] [Lindane]	58-89-9

Table 2C - Chemical Entries on the Master List that are "N.O.S."/Multi-Chemical and Their Representative Chemicals on the Master List

Sort #	N.O.S./Multiple-Chemical Entry on Table 1	CASRN	Sort #	Representative Chemical(s) Listed on Table 1	CASRN
A453	Phenolic compounds [Phenolic compounds, nonhalogenated]	NA	A452	Phenol	108-95-2
			A133	o-Cresol [2-Methyl phenol]	95-48-7
			A134	m-Cresol [3-Methyl phenol]	108-39-4
			A135	p-Cresol [4-Methyl phenol]	106-44-5
			A231	2,4-Dimethyl phenol	105-67-9
			A407	2-Nitrophenol [o-Nitrophenol]	88-75-5
			A408	4-Nitrophenol [p-Nitrophenol]	100-02-7
			A240	2,4-Dinitrophenol	51-28-5
			A238	4,6-Dinitro-o-cresol [4,6-Dinitro-2-methyl phenol]	534-52-1
			A243	Dinoseb [2-sec-Butyl-4,6-dinitrophenol]	88-85-7
			A153	2-Cyclohexyl-4,6-dinitrophenol	131-89-5
A468	Phthalic acid esters, N.O.S.	NA	A232	Dimethyl phthalate	131-11-3
			A217	Diethyl phthalate	84-66-2
			A179	Di-n-butyl phthalate	84-74-2
			A074	Butyl benzyl phthalate	85-68-7
			A277	bis-(2-Ethylhexyl) phthalate [Di-2-ethylhexyl phthalate]	117-81-7
			A244	Di-n-octyl phthalate	117-84-0
A132	Cresols, mixed isomers [Cresylic Acid]	1319-77-3	A133	o-Cresol [2-Methyl phenol]	95-48-7
			A134	m-Cresol [3-Methyl phenol]	108-39-4
			A135	p-Cresol [4-Methyl phenol]	106-44-5
A239	4,6-Dinitro-o-cresol salts [4,6-Dinitro-2-methyl phenol salts]	NA	A239	4,6-Dinitro-o-cresol [4,6-Dinitro-2-methyl phenol]	534-52-1
A270	Ethylenebisdithiocarbamic acid, salts and esters	NA	A269	Ethylenebisdithiocarbamic acid	111-54-6
A464	Phosphorodithioic and phosphorothioic acid esters	NA	A377	Methyl parathion [O,O-Dimethyl O-p-nitrophenyl phosphorothioate]	298-00-0
			A436	Parathion [O,O-Diethyl O-p-nitrophenyl phosphorothioate]	56-38-2
			A563	Thionazin [O,O,-Diethyl O-pyrazinyl phosphorothioate]	297-97-2
			A215	O,O-Diethyl-S-methyl dithiophosphate	3288-58-2
			A461	Phorate [O,O-Diethyl S-(ethylthio)methyl phosphorodithioate]	298-02-2
			A250	Disulfoton [O,O-Diethyl S-(2-(ethylthio)ethyl)phosphorodithioate]	298-04-4
			A602	O,O,O-Triethylphosphorothioate	126-68-1
			A523	Sulfotepp [Tetraethyldithiopyrophosphate]	3689-24-5
			A221	Dimethoate [O,O-Dimethyl S-methylcarbamoylmethyl phosphorodithioate]	60-51-5

Table 2C - Chemical Entries on the Master List that are "N.O.S."/Multi-Chemical and Their Representative Chemicals on the Master List

Sort #	N.O.S./Multiple-Chemical Entry on Table 1	CASRN	Sort #	Representative Chemical(s) Listed on Table 1	CASRN
A411	Nitrosamines, N.O.S.	35571-91-1	A412	N-Nitrosodi-n-butylamine	924-16-3
			A413	N-Nitrosodiethanolamine	1116-54-7
			A414	N-Nitrosodiethylamine	55-18-5
			A415	N-Nitrosodimethylamine	62-75-9
			A416	N-Nitrosodiphenylamine [Diphenylnitrosamine]	86-30-6
			A417	N-Nitrosodi-n-propylamine [Di-n-propylnitrosamine]	621-64-7
			A418	N-Nitroso-N-ethylurea	759-73-9
			A419	N-Nitroso-N-methylethylamine	10595-95-6
			A420	N-Nitroso-N-methylurea	684-93-5
			A421	N-Nitroso-N-methylurethane	615-53-2
			A422	N-Nitrosomethylvinylamine	4549-40-0
			A423	N-Nitrosomorpholine	59-89-2
			A424	N-Nitrosonornicotine	16543-55-8
			A425	N-Nitrosopiperidine	100-75-4
			A426	N-Nitrosopyrrolidine	930-55-2
			A427	N-Nitrososarcosine	13256-22-9
A235	Dinitrobenzene, N.O.S.	25154-54-5	A236	1,3-Dinitrobenzene [m-Dinitrobenzene]	99-65-0
			A237	1,4-Dinitrobenzene [p-Dinitrobenzene]	100-25-4
A494	Pyridines	NA	A493	Pyridine	110-86-1
			A378	2-Methyl pyridine [alpha-Picoline] [2-Picoline]	109-06-8
			A025	4-Aminopyridine	504-24-5
A455	Phenylenediamine, mixed isomers	25265-76-3	A456	1,2-Phenylenediamine [o-Phenylenediamine]	95-54-5
			A457	1,3-Phenylenediamine [m-Phenylenediamine]	108-45-2
			A458	1,4-Phenylenediamine [p-Phenylenediamine]	106-50-3
A575	Toluenediamine [Toluenediamine, isomers not specified]	25376-45-8	A576	2,4-Toluenediamine [2,4-Diaminotoluene] [Toluene-2,4-diamine]	95-80-7
			A577	2,6-Toluenediamine [2,6-Diaminotoluene]	823-40-5
			A578	3,4-Toluenediamine [3,4-Diaminotoluene]	496-72-0
A574	Toluene diisocyanate, mixed isomers [2,4- and 2,6-Toluene diisocyanate mixture]	26471-62-5	A572	2,4-Toluene diisocyanate	584-84-9
			A573	2,6-Toluene diisocyanate	91-08-7
A395	Nicotine salts	NA	A394	Nicotine	54-11-5
A519	Strychnine salts	NA	A518	Strychnine	57-24-9
A499	Saccharin salts	NA	A498	Saccharin	81-07-2
A614	Warfarin salts, when present at concentrations less than 0.3%	NA	A613	Warfarin	81-81-2
A615	Warfarin salts, when present at concentrations greater than 0.3%	NA	A613	Warfarin	81-81-2
A616	Warfarin salts	NA	A613	Warfarin	81-81-2

Table 2C - Chemical Entries on the Master List that are "N.O.S."/Multi-Chemical and Their Representative Chemicals on the Master List

Sort #	N.O.S./Multiple-Chemical Entry on Table 1	CASRN	Sort #	Representative Chemical(s) Listed on Table 1	CASRN
A126	Coal tar creosote	8007-45-2	A126	See all entries for Phenolic compounds, nonhalogenated; Cresols, mixed isomers [Cresylic Acid]; and Tars, polycyclic aromatic hydrocarbons [PAHs]	NA
A131	Creosote	8021-39-4	A131	See all entries for Phenolic compounds, nonhalogenated; Cresols, mixed isomers [Cresylic Acid]; and Tars, polycyclic aromatic hydrocarbons [PAHs]	NA
A524	Tars, polycyclic aromatic hydrocarbons [PAHs]	130498-29-2	A003	Acenaphthene	83-32-9
			A004	Acenaphthylene [Acenaphthalene]	208-96-8
			A009	2-Acetylaminofluorene [2-AAF]	53-96-3
			A030	Anthracene	120-12-7
			A048	Benz[c]acridine	225-51-4
			A050	Benz[a]anthracene	56-55-3
			A055	Benzo[b]fluoranthene	205-99-2
			A056	Benzo[j]fluoranthene	205-82-3
			A057	Benzo[k]fluoranthene	207-08-9
			A058	Benzo[g,h,i]perylene	191-24-2
			A059	Benzo[a]pyrene	50-32-8
			A124	Chrysene	218-01-9
			A169	Dibenz[a,h]acridine	226-36-8
			A170	Dibenz[a,j]acridine	224-42-0
			A171	Dibenz[a,h]anthracene	53-70-3
			A172	7H-Dibenzo[c,g]carbazole	194-59-2
			A174	Dibenzo[a,e]pyrene	192-65-4
			A175	Dibenzo[a,h]pyrene	189-64-0
			A176	Dibenzo[a,i]pyrene	189-55-9
			A225	7,12-Dimethylbenz[a]anthracene	57-97-6
			A283	Fluoranthene	206-44-0
			A284	Fluorene	86-73-7
			A330	Indeno[1,2,3-cd]pyrene	193-39-5
			A363	3-Methylcholanthrene	56-49-5
			A375	2-Methylnaphthalene	91-57-6
			A451	Phenanthrene	85-01-8
			A492	Pyrene	129-00-0
A617	Xylenes, mixed isomers [Xyenes, total]	1330-20-7	A618	o-Xylene	95-47-6
			A619	m-Xylene	108-38-3
			A620	p-Xylene	106-42-3

Table 3 - HWIR Exemption Chemicals

Sort #	Chemical and Representative Chemical Name [Alternate Names]	CASRN	Note:
A002	A2123 [Ethanimidothioic acid, 2-(dimethylamino) -N-hydroxy-2-oxo-,methyl ester]	30558-43-1	
A003	Acenaphthene	83-32-9	b
A004	Acenaphthylene [Acenaphthalene]	208-96-8	b
A005	Acetaldehyde [Ethanal]	75-07-0	
A006	Acetone [2-Propanone]	67-64-1	
A007	Acetonitrile [Ethanenitrile]	75-05-8	
A008	Acetophenone	98-86-2	
A009	2-Acetylaminofluorene [2-AAF]	53-96-3	b
A012	Acrolein [2-Propenal]	107-02-8	
A013	Acrylamide [Propenaminde]	79-06-1	
A014	Acrylic acid	79-10-7	
A015	Acrylonitrile [2-Propenenitrile]	107-13-1	
A017	Aldicarb	116-06-3	
A018	Aldicarb sulfone	1646-88-4	
A019	Aldrin	309-00-2	
A020	Allyl alcohol	107-18-6	
A021	Allyl chloride [3-Chloropropylene] [3-Chloropropene]	107-05-1	
A023	4-Aminobiphenyl	92-67-1	
A024	5-Aminomethyl-3-isoxazolol [Muscimol]	2763-96-4	
A025	4-Aminopyridine	504-24-5	b
A026	Amitrole	61-82-5	
A027	Ammonium picrate	131-74-8	
A029	Aniline	62-53-3	
A030	Anthracene	120-12-7	b
A031	Antimony [Antimony, total]	7440-36-0	b, c
A033	Aramite	140-57-8	
A034	Arsenic [Arsenic, total]	7440-38-2	b, c
A039	Auramine	492-80-8	
A040	Azaserine	115-02-6	
A041	Barban	101-27-9	
A042	Barium [Barium, total]	7440-39-3	b, c
A045	Bendiocarb	22781-23-3	
A046	Bendiocarb phenol	22961-82-6	
A047	Benomyl	17804-35-2	
A048	Benz[c]acridine	225-51-4	b
A050	Benz[a]anthracene	56-55-3	b
A051	Benzene	71-43-2	
A053	Benzenesulfonyl chloride	98-09-9	
A054	Benzidine	92-87-5	
A055	Benzo[b]fluoranthene	205-99-2	b
A056	Benzo[j]fluoranthene	205-82-3	b
A057	Benzo[k]fluoranthene	207-08-9	b
A058	Benzo[g,h,i]perylene	191-24-2	b
A059	Benzo[a]pyrene	50-32-8	b
A061	Benzyl alcohol	100-51-6	
A062	Benzyl chloride	100-44-7	
A063	Beryllium [Beryllium, total]	7440-41-7	b, c
A066	Bromoacetone	598-31-2	
A067	Bromodichloromethane [Dichlorobromomethane]	75-27-4	b
A068	Bromoform [Tribromomethane]	75-25-2	b
A069	Bromomethane [Methyl bromide]	74-83-9	b
A070	4-Bromophenyl phenyl ether [p-Bromodiphenyl ether]	101-55-3	
A071	Brucine [2,3-Dimethoxy strychnidin-10-one]	357-57-3	
A072	n-Butyl alcohol [n-Butanol]	71-36-3	
A073	Butylate	2008-41-5	
A074	Butyl benzyl phthalate	85-68-7	b
A076	Cadmium [Cadmium, total]	7440-43-9	b, c
A080	Carbaryl	63-25-2	
A081	Carbendazim	10605-21-7	
A082	Carbofuran	1563-66-2	
A083	Carbofuran phenol	1563-38-8	
A084	Carbon disulfide	75-15-0	
A086	Carbon tetrachloride	56-23-5	b
A087	Carbosulfan	55285-14-8	

Table 3 - HWIR Exemption Chemicals

Sort #	Chemical and Representative Chemical Name [Alternate Names]	CASRN	Note:
A089	Chlorambucil	305-03-3	
A091	Chlordane [Chlordane, alpha and gamma isomers]	57-74-9	a
A097	Chlornaphazin	494-03-1	
A098	Chloroacetaldehyde	107-20-0	
A100	4-Chloroaniline [p-Chloroaniline]	106-47-8	
A101	Chlorobenzene [Monochlorobenzene]	108-90-7	b
A102	Chlorobenzilate	510-15-6	
A103	p-Chloro-m-cresol	59-50-7	b
A104	Chloroethane [Ethyl chloride]	75-00-3	b
A106	bis-(2-Chloroethoxy) methane [Dichloromethoxy ethane]	111-91-1	
A107	bis-(2-Chloroethyl) ether [Dichloroethyl ether] [1,1'-Oxybis(2-chloroethane)]	111-44-4	b
A109	Chloroform [Trichloromethane]	67-66-3	b
A110	bis-(2-Chloroisopropyl) ether [2,2'-Oxybis(1-chloropropane)] [Bis-(2-Chloro-1-methylethyl) ether]	108-60-1	b
A111	Chloromethane [Methyl chloride]	74-87-3	b
A112	bis-(Chloromethyl) ether [Dichloromethyl ether]	542-88-1	b
A114	2-Chloronaphthalene [beta-Chloronaphthalene]	91-58-7	b
A115	2-Chlorophenol [o-Chlorophenol]	95-57-8	b
A116	4-Chlorophenyl phenyl ether [p-Chlorodiphenyl ether]	7005-72-3	b
A117	1-(o-Chlorophenyl) thiourea	5344-82-1	
A118	Chloroprene [2-Chloro-1,3-butadiene]	126-99-8	
A119	3-Chloropropionitrile	542-76-7	
A120	4-Chloro-o-toluidine hydrochloride	3165-93-3	
A121	Chromium [Chromium, total]	7440-47-3	b, c
A124	Chrysene	218-01-9	b
A125	Citrus red No. 2	6358-53-8	
A127	Cobalt [Cobalt, total]	7440-48-4	e
A128	Copper [Copper, total]	7440-50-8	c
A130	Copper dimethyldithiocarbamate	137-29-1	
A133	o-Cresol [2-Methyl phenol]	95-48-7	a
A134	m-Cresol [3-Methyl phenol]	108-39-4	a
A135	p-Cresol [4-Methyl phenol]	106-44-5	a
A136	Crotonaldehyde [trans-2-Butenal] [beta-Methylacrolein]	4170-30-3	
A137	Cumene [Isopropyl benzene]	98-82-8	
A138	m-Cumenyl methylcarbamate	64-00-6	
A142	Cyanides, amenable	57-12-5	b, d
A145	Cyanides, total	57-12-5	b, d
A149	Cycasin	14901-08-7	
A150	Cycloate	1134-23-2	
A151	Cyclohexane	110-82-7	
A152	Cyclohexanone	108-94-1	
A153	2-Cyclohexyl-4,6-dinitrophenol	131-89-5	b
A154	Cyclophosphamide	50-18-0	
A155	2,4-D [2,4-Dichlorophenoxyacetic acid]	94-75-7	d
A157	Daunomycin	20830-81-3	
A158	Dazomet	533-74-4	
A160	o,p'-DDD	53-19-0	a
A161	p,p'-DDD	72-54-8	a
A163	o,p'-DDE [o,p' TDE]	3424-82-6	a
A164	p,p'-DDE [p,p'-TDE]	72-55-9	a
A166	o,p'-DDT	789-02-6	a
A167	p,p'-DDT	50-29-3	a
A168	Diallate	2303-16-4	
A169	Dibenz[a,h]acridine	226-36-8	b
A170	Dibenz[a,j]acridine	224-42-0	b
A171	Dibenz[a,h]anthracene	53-70-3	b
A172	7H-Dibenzo[c,g]carbazole	194-59-2	b
A173	Dibenzofuran	132-64-9	
A174	Dibenzo[a,e]pyrene	192-65-4	b
A175	Dibenzo[a,h]pyrene	189-64-0	b
A176	Dibenzo[a,i]pyrene	189-55-9	b
A177	Dibromochloromethane [Chlorodibromomethane]	124-48-1	b
A178	1,2-Dibromo-3-chloropropane	96-12-8	
A179	Di-n-butyl phthalate	84-74-2	b
A181	1,2-Dichlorobenzene [o-Dichlorobenzene]	95-50-1	a, b

Table 3 - HWIR Exemption Chemicals

Sort #	Chemical and Representative Chemical Name [Alternate Names]	CASRN	Note:
A182	1,3-Dichlorobenzene [m-Dichlorobenzene]	541-73-1	a, b
A183	1,4-Dichlorobenzene [p-Dichlorobenzene]	106-46-7	a, b
A184	3,3'-Dichlorobenzidine	91-94-1	
A186	cis-1,4-dichloro-2-butene	1476-11-5	a
A187	trans-1-4-Dichloro-2-butene	110-57-6	a
A188	Dichlorodifluoromethane [CFC-12]	75-71-8	b
A189	1,1-Dichloroethane [Ethylidene dichloride]	75-34-3	b
A190	1,2-Dichloroethane [Ethylene dichloride]	107-06-2	b
A192	1,1-Dichloroethylene [Vinylidene chloride]	75-35-4	b
A194	cis-1,2-Dichloroethylene	156-59-2	a, b
A195	trans-1,2-Dichloroethylene	156-60-5	a, b
A196	2,2'-Dichloroisopropyl ether [2,2'-Oxybis(2-chloropropane)]	39638-32-9	b
A197	2,4-Dichlorophenol	120-83-2	b
A198	2,6-Dichlorophenol	87-65-0	b
A201	1,1-Dichloropropane [Propylidene chloride]	78-99-9	a, b
A202	1,2-Dichloropropane [Propylene dichloride]	78-87-5	a, b
A204	1,3-Dichloropropanol	26545-73-3	a, b
A205	Dichloropropene [Dichloropropylene] [Dichloro-1-Propene]	26952-23-8	b
A208	cis-1,3-Dichloropropene [cis-1,3-Dichloropropylene]	10061-01-5	a, b
A209	trans-1,3-Dichloropropene [trans-1,3-Dichloropropylene]	10061-02-6	a, b
A210	Dieldrin	60-57-1	
A211	1,2,3,4-Diepoxybutane [2,2'-Bioxirane]	1464-53-5	
A213	Diethylene glycol, dicarbamate	5952-26-1	
A215	O,O-Diethyl-S-methyl dithiophosphate	3288-58-2	b
A216	Diethyl-p-nitrophenyl phosphate	311-45-5	
A217	Diethyl phthalate	84-66-2	b
A218	Diethylstilbestrol	56-53-1	
A219	Dihydrosafrole	94-58-6	
A221	Dimethoate [O,O-Dimethyl S-methylcarbamoylmethyl phosphorodithioate]	60-51-5	b
A222	3,3'-Dimethoxybenzidine	119-90-4	
A223	Dimethylamine [N-Methyl methanamine]	124-40-3	
A224	p-Dimethylaminoazobenzene [4-Dimethylaminoazobenzene]	60-11-7	
A225	7,12-Dimethylbenz[a]anthracene	57-97-6	b
A226	3,3'-Dimethylbenzidine	119-93-7	
A231	2,4-Dimethyl phenol	105-67-9	b
A232	Dimethyl phthalate	131-11-3	b
A233	Dimethyl sulfate	77-78-1	
A234	Dimetilan	644-64-4	
A236	1,3-Dinitrobenzene [m-Dinitrobenzene]	99-65-0	b
A237	1,4-Dinitrobenzene [p-Dinitrobenzene]	100-25-4	b
A238	4,6-Dinitro-o-cresol [4,6-Dinitro-2-methyl phenol]	534-52-1	d
A240	2,4-Dinitrophenol	51-28-5	b
A241	2,4-Dinitrotoluene	121-14-2	
A242	2,6-Dinitrotoluene	606-20-2	
A243	Dinoseb [2-sec-Butyl-4,6-dinitrophenol]	88-85-7	b
A244	Di-n-octyl phthalate	117-84-0	b
A245	1,4-Dioxane [1,4-Diethylene dioxide]	123-91-1	
A246	Diphenylamine [N,N-Diphenylamine]	122-39-4	
A247	1,2-Diphenylhydrazine	122-66-7	
A248	Di-n-propylamine [Dipropylamine]	142-84-7	
A249	Disulfiram [Tetraethylthiuram disulfide]	97-77-8	
A250	Disulfoton [O,O-Diethyl S-(2-(ethylthio)ethyl)phosphorodithioate]	298-04-4	b
A251	Dithiobiuret	541-53-7	
A253	Endosulfan I [alpha-Endosulfan]	959-98-8	a
A254	Endosulfan II [beta-Endosulfan]	33213-65-9	a
A255	Endosulfan sulfate	1031-07-8	
A256	Endothall	145-73-3	
A257	Endrin	72-20-8	
A258	Endrin aldehyde	7421-93-4	b
A259	Endrin ketone	53494-70-5	b
A261	Epichlorohydrin [1-Chloro-2,3-epoxypropane]	106-89-8	
A262	Epinephrine	51-43-4	
A263	2-Ethoxyethanol [Ethylene glycol monoethyl ether] [Cellosolve]	110-80-5	b
A264	Ethyl acetate	141-78-6	

Table 3 - HWIR Exemption Chemicals

Sort #	Chemical and Representative Chemical Name [Alternate Names]	CASRN	Note:
A265	Ethyl acrylate	140-88-5	
A266	Ethyl benzene	100-41-4	
A267	Ethyl carbamate [Urethane] [Carbamic acid, ethyl ester]	51-79-6	
A268	S-Ethyl dipropylthiocarbamate [EPTC]	759-94-4	
A269	Ethylenebisdithiocarbamic acid	111-54-6	d
A271	Ethylene dibromide [1,2-Dibromoethane]	106-93-4	
A273	Ethylene oxide	75-21-8	
A274	Ethylene thiourea [2-Imidazolidinethione]	96-45-7	
A275	Ethyl ether [Ethane 1,1' oxybis]	60-29-7	
A276	bis-(2-Ethylhexyl) phthalate [Di-2-ethylhexyl phthalate]	117-81-7	b
A277	Ethyl methacrylate	97-63-2	
A278	Ethyl methanesulfonate	62-50-0	
A279	Ethyl Ziram	14324-55-1	
A280	Famphur	52-85-7	
A281	Ferbam	14484-64-1	
A282	2-Fluoracetamide	640-19-7	
A283	Fluoranthene	206-44-0	b
A284	Fluorene	86-73-7	b
A285	Fluoride	16984-48-8	c
A287	Fluoroacetic acid, sodium salt [Sodium fluoroacetate]	62-74-8	
A288	Formaldehyde	50-00-0	
A289	Formetanate hydrochloride	23422-53-9	
A290	Formic Acid	64-18-6	
A291	Formparanate	17702-57-7	
A292	Furan	110-00-9	
A293	Furfural [2-Furancarboxaldehyde]	98-01-1	
A296	Heptachlor	76-44-8	
A298	Heptachlor epoxide, alpha, beta, and gamma isomers	1024-57-3	a
A300	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	a
A302	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	a
A303	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	a
A304	Hexachlorobenzene	118-74-1	b
A305	Hexachloro-1,3-butadiene [Hexachlorobutadiene]	87-68-3	
A307	alpha-Hexachlorocyclohexane [alpha-BHC]	319-84-6	a
A308	beta-Hexachlorocyclohexane [beta-BHC]	319-85-7	a
A309	delta-Hexachlorocyclohexane [delta-BHC]	319-86-8	a
A310	gamma-Hexachlorocyclohexane [gamma-BHC] [Lindane]	58-89-9	a
A311	Hexachlorocyclopentadiene	77-47-4	
A313	1,2,3,4,7,8 Hexachlorodibenzo-p-dioxin	39227-28-6	a
A314	1,2,3,6,7,8 Hexachlorodibenzo-p-dioxin	57653-85-7	a
A315	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	a
A317	1,2,3,4,7,8 Hexachlorodibenzofuran	70648-26-9	a
A318	1,2,3,6,7,8 Hexachlorodibenzofuran	57117-44-9	a
A319	1,2,3,7,8,9 Hexachlorodibenzofuran	72918-21-9	a
A320	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	a
A321	Hexachloroethane	67-72-1	b
A322	Hexachlorophene	70-30-4	
A323	Hexachloropropene [Hexachloropropylene]	1888-71-7	
A324	Hexaethyl tetraphosphate	757-58-4	
A325	2-Hexanone	591-78-6	
A330	Indeno[1,2,3-cd]pyrene	193-39-5	b
A331	Iodomethane [Methyl iodide]	74-88-4	b
A332	3-Iodo-2-propynyl N-butylcarbamate	55406-53-6	
A333	Isobutyl alcohol [isobutanol]	78-83-1	
A334	Isodrin	465-73-6	
A335	Isolan [Isopropyl methyl pyrazolyl dimethylcarbamate]	119-38-0	
A336	Isophorone	78-59-1	
A337	Isosafrole	120-58-1	
A338	Kepone [Chlordecone]	143-50-0	
A339	Lasiocarpine	303-34-1	
A340	Lead [Lead,total]	7439-92-1	b, c
A347	Maleic hydrazide	123-33-1	
A348	Malononitrile [Propanedinitrile]	109-77-3	
A349	Manganese dimethyldithiocarbamate	15339-36-3	

Table 3 - HWIR Exemption Chemicals

Sort #	Chemical and Representative Chemical Name [Alternate Names]	CASRN	Note:
A350	Melphalan	148-82-3	
A352	Mercury [Mercury, total]	7439-97-6	b, c
A355	Metam Sodium	137-42-8	
A356	Methacrylonitrile [2-Methyl-2-propenenitrile]	126-98-7	
A357	Methanol [Methyl alcohol]	67-56-1	
A358	Methapyrilene	91-80-5	
A359	Methiocarb	2032-65-7	
A360	Methomyl	16752-77-5	
A361	Methoxychlor	72-43-5	
A363	3-Methylcholanthrene	56-49-5	b
A364	4,4-Methylene bis-(2-chloroaniline)	101-14-4	
A365	Methylene bromide [Dibromomethane]	74-95-3	b
A366	Methylene chloride [Dichloromethane]	75-09-2	b
A367	Methyl ethyl ketone [2-Butanone] [MEK]	78-93-3	
A370	Methyl isobutyl ketone [Hexone] [4-Methyl-2-pentanone]	108-10-1	
A372	2-Methyllactonitrile [Acetone cyanohydrin]	75-86-5	
A373	Methyl methacrylate	80-62-6	
A374	Methyl methanesulfonate	66-27-3	
A375	2-Methylnaphthalene	91-57-6	b
A377	Methyl parathion [O,O-Dimethyl O-p-nitrophenyl phosphorothioate]	298-00-0	b
A378	2-Methyl pyridine [alpha-Picoline] [2-Picoline]	109-06-8	b
A379	Methylthiouracil	56-04-2	
A380	Metolcarb	1129-41-5	
A381	Mexacarbate	315-18-4	
A383	Molinate	2212-67-1	
A385	Naphthalene	91-20-3	
A386	1,4-Naphthoquinone	130-15-4	
A387	1-Naphthylamine [alpha-Naphthylamine]	134-32-7	
A388	2-Naphthylamine [beta-Naphthylamine]	91-59-8	
A389	1-Naphthyl-2-thiourea [alpha-Naphthylthiourea]	86-88-4	
A390	Nickel [Nickel, total]	7440-02-0	b, c
A394	Nicotine	54-11-5	d
A397	2-Nitroaniline [o-Nitroaniline] [2-Nitrobenzenamine]	88-74-4	
A398	3-Nitroaniline [m-Nitroaniline] [3-Nitrobenzenamine]	99-09-2	
A399	4-Nitroaniline [p-Nitroaniline] [4-Nitrobenzenamine]	100-01-6	
A400	Nitrobenzene	98-95-3	
A406	Nitroglycerine	55-63-0	
A407	2-Nitrophenol [o-Nitrophenol]	88-75-5	b
A408	4-Nitrophenol [p-Nitrophenol]	100-02-7	b
A409	2-Nitropropane	79-46-9	
A410	4-Nitroquinoline-1-oxide	56-57-5	
A412	N-Nitrosodi-n-butylamine	924-16-3	b
A413	N-Nitrosodiethanolamine	1116-54-7	b
A414	N-Nitrosodiethylamine	55-18-5	b
A415	N-Nitrosodimethylamine	62-75-9	b
A416	N-Nitrosodiphenylamine [Diphenylnitrosamine]	86-30-6	b
A417	N-Nitrosodi-n-propylamine [Di-n-propylnitrosamine]	621-64-7	b
A418	N-Nitroso-N-ethylurea	759-73-9	b
A419	N-Nitroso-N-methylethylamine	10595-95-6	b
A420	N-Nitroso-N-methylurea	684-93-5	b
A421	N-Nitroso-N-methylurethane	615-53-2	b
A422	N-Nitrosomethylvinylamine	4549-40-0	b
A423	N-Nitrosomorpholine	59-89-2	b
A424	N-Nitrosonornicotine	16543-55-8	b
A425	N-Nitrosopiperidine	100-75-4	b
A426	N-Nitrosopyrrolidine	930-55-2	b
A427	N-Nitrososarcosine	13256-22-9	b
A428	5-Nitro-o-toluidine [2-Methyl-5-nitroaniline]	99-55-8	
A429	Octachlorodibenzo-p-dioxin [OCDD]	3268-87-9	a
A430	Octachlorodibenzofuran [OCDF]	39001-02-0	a
A431	Octamethylpyrophosphoramide	152-16-9	
A433	Osmium	7440-04-2	c
A434	Oxamyl	23135-22-0	
A435	Paraldehyde	123-63-7	

Table 3 - HWIR Exemption Chemicals

Sort #	Chemical and Representative Chemical Name [Alternate Names]	CASRN	Note:
A436	Parathion [O,O-Diethyl O-p-nitrophenyl phosphorothioate]	56-38-2	b
A437	Pebulate	1114-71-2	
A438	Pentachlorobenzene	608-93-5	b
A440	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	a
A442	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	a
A443	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	a
A444	Pentachloroethane	76-01-7	b
A445	Pentachloronitrobenzene [PCNB] [Quintobenzene] [Quintozene]	82-68-8	
A446	Pentachlorophenol [PCP]	87-86-5	b, c
A448	1,3-Pentadiene	504-60-9	
A449	bis-(Pentamethylene) thiuram tetrasulfide	120-54-7	
A450	Phenacetin	62-44-2	
A451	Phenanthrene	85-01-8	b
A452	Phenol	108-95-2	b
A454	Phentermine [alpha,alpha-Dimethylphenethylamine]	122-09-8	
A456	1,2-Phenylenediamine [o-Phenylenediamine]	95-54-5	a
A457	1,3-Phenylenediamine [m-Phenylenediamine]	108-45-2	a
A458	1,4-Phenylenediamine [p-Phenylenediamine]	106-50-3	a
A460	Phenylthiourea	103-85-5	
A461	Phorate [O,O-Diethyl S-(ethylthio)methyl phosphorodithioate]	298-02-2	b
A466	o-Phthalic acid	88-99-3	
A467	p-Phthalic acid [Terephthalic acid] [1,4-Benzenedicarboxylic acid]	100-21-0	
A470	Physostigmine	57-47-6	
A471	Physostigmine salicylate	57-64-7	
A472	Polychlorinated biphenyls, total [PCBs, total]	1336-36-3	e
A476	Potassium dimethyldithiocarbamate	128-03-0	
A477	Potassium N-hydroxymethyl N-methyldithiocarbamate	51026-28-9	
A478	Potassium N-methyldithiocarbamate	137-41-7	
A481	Promecarb	2631-37-0	
A482	Pronamide	23950-58-5	
A483	Propanenitrile [Propionitrile] [Ethyl cyanide]	107-12-0	
A484	1,3-Propane sultone	1120-71-4	
A485	Propargyl alcohol [2-Propyn-1-ol]	107-19-7	
A486	Propham	122-42-9	
A487	Propoxur [Baygon] [2-(1-Methylethoxy)-phenol, methylcarbamate]	114-26-1	
A488	n-Propyl amine [1-Propanamine]	107-10-8	
A489	1,2-Propyleneimine [2-Methylaziridine]	75-55-8	
A490	Propylthiouracil [6-Propyl-2-thiouracil]	51-52-5	
A491	Prosulfocarb	52888-80-9	
A492	Pyrene	129-00-0	b
A493	Pyridine	110-86-1	b
A495	Quinone [p-Benzoquinone]	106-51-4	
A496	Reserpine	50-55-5	
A497	Resorcinol [1,3-Benzenediol]	108-46-3	
A498	Saccharin	81-07-2	d
A500	Safrole	94-59-7	
A501	Selenium [Selenium, total]	7782-49-2	b, c
A505	Selenium, tetrakis(dimethyldithiocarbamate) [Selenium dimethyldithiocarbamate]	144-34-3	
A507	Silver [Silver, total]	7440-22-4	b, c
A510	Silvex [2,4,5-Trichlorophenoxypropionic acid] [2,4,5-TP]	93-72-1	b
A511	Sodium azide	26628-22-8	
A513	Sodium dibutyldithiocarbamate	136-30-1	
A514	Sodium diethyldithiocarbamate	148-18-5	
A515	Sodium dimethyldithiocarbamate	128-04-1	
A517	Streptozotocin	18883-66-4	
A518	Strychnine	57-24-9	d
A520	Styrene [Vinyl benzene] [Phenylethylene]	100-42-5	
A521	Sulfallate	95-06-7	
A522	Sulfide	18496-25-8	c
A523	Sulfotepp [Tetraethyldithiopyrophosphate]	3689-24-5	b
A525	Tetrabutylthiuram disulfide	1634-02-2	
A526	Tetramethylthiuram monosulfide [Bis-(dimethylthiocarbamoyl)sulfide]	97-74-5	
A527	1,2,4,5-Tetrachlorobenzene	95-94-3	a, b
A530	2,3,7,8-Tetrachlorodibenzo-p-dioxin [2,3,7,8-TCDD]	1746-01-6	a

Table 3 - HWIR Exemption Chemicals

Sort #	Chemical and Representative Chemical Name [Alternate Names]	CASRN	Note:
A532	2,3,7,8-Tetrachlorodibenzofuran [2,3,7,8-TCDF]	51207-31-9	a
A534	1,1,1,2-Tetrachloroethane	630-20-6	a
A535	1,1,2,2-Tetrachloroethane	79-34-5	a, b
A536	Tetrachloroethylene [Perchloroethylene]	127-18-4	
A537	2,3,4,6-Tetrachlorophenol	58-90-2	a, b, c
A544	Tetrahydrofuran	109-99-9	
A545	Tetranitromethane	509-14-8	
A551	Thallium [Thallium, total]	7440-28-0	b, c
A559	Thioacetamide	62-55-5	
A560	Thiodicarb	59669-26-0	
A561	Thiofanox	39196-18-4	
A562	Thiomethanol [Methyl mercaptan] [Methanethiol]	74-93-1	
A563	Thionazin [O,O,-Diethyl O-pyrazinyl phosphorothioate]	297-97-2	b
A564	Thiophanate-methyl	23564-05-8	
A565	Thiophenol [Benzenethiol]	108-98-5	
A566	Thiosemicarbazide	79-19-6	
A567	Thiourea	62-56-6	
A568	Thiram [Thiuram] [Tetramethylthiuram disulfide]	137-26-8	
A569	Tin [Tin, total]	7440-31-5	e
A570	Tirpate	26419-73-8	
A571	Toluene [Methylbenzene]	108-88-3	
A572	2,4-Toluene diisocyanate	584-84-9	a
A573	2,6-Toluene diisocyanate	91-08-7	a
A576	2,4-Toluenediamine [2,4-Diaminotoluene] [Toluene-2,4-diamine]	95-80-7	a
A577	2,6-Toluenediamine [2,6-Diaminotoluene]	823-40-5	a
A578	3,4-Toluenediamine [3,4-Diaminotoluene]	496-72-0	a
A579	o-Toluidine [2-Methylaniline]	95-53-4	c
A580	p-Toluidine [4-Methylaniline]	106-49-0	
A582	Toxaphene [Chlorinated camphene]	8001-35-2	
A583	Triallate	2303-17-5	
A584	2,4,6-Tribromophenol	118-79-6	
A585	1,2,4-Trichlorobenzene	120-82-1	a, b
A588	1,1,1-Trichloroethane [Methyl chloroform]	71-55-6	a, b
A589	1,1,2-Trichloroethane [Vinyl trichloride]	79-00-5	a, b
A590	Trichloroethylene	79-01-6	
A591	Trichlorofluoromethane [Trichloromonofluoromethane] [CFC-11]	75-69-4	b
A592	Trichloromethanethiol	75-70-7	
A593	2,4,5-Trichlorophenol	95-95-4	a, b
A594	2,4,6-Trichlorophenol	88-06-2	a, b
A597	2,4,5-Trichlorophenoxyacetic acid [2,4,5,-T]	93-76-5	b
A599	1,2,3-Trichloropropane	96-18-4	a
A600	1,1,2-Trichloro-1,2,2-trifluoroethane [Freon 113]	76-13-1	b
A601	Triethylamine	121-44-8	
A602	O,O,O-Triethylphosphorothioate	126-68-1	b
A603	1,3,5-Trinitrobenzene [sym-Trinitrobenzene]	99-35-4	
A604	Tris-(1-azridinyl) phosphine sulfide	52-24-4	
A605	Tris-(2,3 -dibromopropyl) phosphate	126-72-7	
A606	Trypan blue	72-57-1	
A608	Vanadium [Vanadium, total]	7440-62-2	c
A610	Vernolate [Vernam]	1929-77-7	
A611	Vinyl acetate	108-05-4	
A612	Vinyl chloride [Chloroethylene] [Ethylene chloride]	75-01-4	
A613	Warfarin	81-81-2	d
A618	o-Xylene	95-47-6	a
A619	m-Xylene	108-38-3	a
A620	p-Xylene	106-42-3	a
A621	Zinc [Zinc,total]	7440-66-6	c
A626	Ziram	137-30-4	

Table 3 Notes:

a) These chemicals are isomers that have been chosen to represent either mixtures of isomers or where isomers were not specified (e.g., **ortho-, meta-, and para-Xylene** are all isomers and therefore, represent **Xylenes, isomers not specified**). These chemicals may be used in industry as single isomers or as a mixture of isomers. While the CASRN for mixtures of isomers are not the same as those for the individual isomers, the mixtures are regulated by inclusion of these isomers on the list.

b) These chemicals have been chosen to represent the various classes of chemicals that are regulated as "multi-chemical classes" under RCRA (e.g., **Endrin aldehyde** and **Endrin ketone** have been chosen as representatives of **Endrin Metabolites,** which is regulated under RCRA.) Other chemicals with this note specifically represent those "multi-chemical classes" that are regulated under RCRA using an "N.O.S." designation. N.O.S. stands for "Not Otherwise Specified" (e.g., **2-Chloronaphthalene** has been chosen to represent **Chlorinated naphthalene, N.O.S.**) For some chemicals all the isomers were already listed in RCRA regulations, for others only the commercially available isomers were listed.

c) These chemicals have been chosen to represent RCRA-regulated specific chemical salts or compounds that cannot be measured directly. By analyzing for the chemicals listed with this footnote, the other RCRA-regulated chemicals are therefore covered (e.g., **Arsenic acid**, **Arsenic Trioxide**, and other arsenic compounds can be measured in wastes by measuring for **Arsenic, total**.)

d) These chemicals have been chosen to represent RCRA-regulated "groups" of chemicals (e.g., salts) that are directly derived-from the chemical on the list (e.g., **Nicotine salts** are derived-from **Nicotine**.) The salts are typically converted back to the parent compound or a related compound during analysis of wastes. The individual salts can not typically be measured directly. All salts, esters, and other compounds that are measured by analyzing for this chemical are also regulated by this rule; i.e., one can not escape regulation by claiming that the salt is not listed on Appendix X for the chemicals with this footnote.

e) All compounds associated with PCBs, Cobalt and Tin are covered when present in RCRA "listed" wastes (i.e., F, K, U & P wastes) and therefore are considered to be part of the HWIR Exemption List.