###### Reporting Codes for EPA Form R and Instructions for Reporting Metals

Form R Part II

Revision Codes:

RR1 New Monitoring Data

RR2 New Emission Factor(s)

RR3 New Chemical Concentration Data

RR4 Recalculation(s)

RR5 Other Reason(s)

Withdrawal Codes:

WT1 Did not meet the reporting threshold for manufacturing, processing, or otherwise use

WT2 Did not meet the reporting threshold for number of employees

WT3 Not in a covered NAICS Code

WO1 Other reason(s)

Section 1.1. CAS Number

EPCRA Section 313 Chemical Category Codes

N010 Antimony compounds

N020 Arsenic compounds

N040 Barium compounds

N050 Beryllium compounds

N078 Cadmium compounds

N084 Chlorophenols

N090 Chromium compounds

N096 Cobalt compounds

N100 Copper compounds

N106 Cyanide compounds

N120 Diisocyanates

N150 Dioxin and dioxin-like compounds N171Ethylenebisdithiocarbamic

acid, salts and esters (EBDCs)

N230 Certain glycol ethers

N420 Lead compounds

N450 Manganese compounds

N458 Mercury compounds

N495 Nickel compounds

N503 Nicotine and salts

N511 Nitrate compounds

N575 Polybrominated biphenyls (PBBs)

N583 Polychlorinated alkanes

N590 Polycyclic aromatic compounds

N725 Selenium compounds

N740 Silver compounds

N746 Strychnine and salts

N760 Thallium compounds

N770 Vanadium compounds

N874 Warfarin and salts

N982 Zinc compounds

Section 4. Maximum Amount of the Toxic Chemical On-Site at Any Time During the Calendar Year

Range(pounds)

| Range Code | From | To |
| --- | --- | --- |
| 01 | 0,000,000 | 0,000,099 |
| 02 | 0,000,100 | 0,000,999 |
| 03 | 0,001,000 | 0,009,999 |
| 04 | 0,010,000 | 0,099,999 |
| 05 | 0,100,000 | 0,999,999 |
| 06 | 1,000,000 | 9,999,999 |
| 07 | 10,000,000 | 49,999,999 |
| 08 | 50,000,000 | 99,999,999 |
| 09 | 100,000,000 | 499,999,999 |
| 10 | 500,000,000 | 999,999,999 |
| 11 | 1 billion | more than 1 billion |

Section 5. Quantity of the Non-PBT Chemical Entering Each Environmental Medium On-site and Section 6. Transfers of the Toxic Chemical in Wastes to Off-Site Locations

Total Release or Transfer

| **Code** | **Range (pounds)** |
| --- | --- |
| A | 001-10 |
| B | 011-499 |
| C | 500-999 |

Basis of Estimate

M1- Estimate is based on continuous monitoring data or measurements for the EPCRA section 313 chemical.

M2- Estimate is based on periodic or random monitoring data or measurements for the EPCRA section 313 chemical.

C- Estimate is based on mass balance calculations, such as calculation of the amount of the EPCRA section 313 chemical in streams entering and leaving process equipment.

E1- Estimate is based on published emission factors, such as those relating release quantity to through-put or equipment type (e.g., air emission factors).

E2- Estimate is based on site specific emission factors, such as those relating release quantity to through-put or equipment type (e.g., air emission factors).

O- Estimate is based on other approaches such as engineering calculations (e.g., estimating volatilization using published mathematical formulas) or best engineering judgment. This would include applying an estimated removal efficiency to a waste stream, even if the composition of the stream before treatment was fully identified through monitoring data.

Section 6. Transfers of the Toxic Chemical in Wastes to Off-Site Locations

Type of Waste Disposal/Treatment/Energy Recovery/Recycling

M10 Storage Only

M20 Solvents/Organics Recovery

M24 Metals Recovery

M26 Other Reuse or Recovery

M28 Acid Regeneration

M40 Solidification/Stabilization

M41 Solidification/Stabilization-Metals and Metal Category Compounds only

M50 Incineration/Thermal Treatment

M54 Incineration/Insignificant Fuel Value

M56 Energy Recovery

M61 Wastewater Treatment (Excluding POTW)

M62 Wastewater Treatment (Excluding POTW) - Metals and Metal Category Compounds only

M64 Other Landfills

M65 RCRA Subtitle C Landfills

M66 Subtitle C Surface Impoundment

M67 Other Surface Impoundments

M69 Other Waste Treatment

M73 Land Treatment

M79 Other Land Disposal

M81 Underground Injection to Class I Wells

M82 Underground Injection to Class II-V Wells

M90 Other Off-Site Management

M92 Transfer to Waste Broker - Energy Recovery

M93 Transfer to Waste Broker - Recycling

M94 Transfer to Waste Broker - Disposal

M95 Transfer to Waste Broker - Waste Treatment

M99 Unknown

Section 7A. On-Site Waste Treatment Methods and Efficiency

General Waste Stream

A Gaseous (gases, vapors, airborne particulates)

W Wastewater (aqueous waste)

L Liquid waste streams (non-aqueous waste)

S Solid waste streams (including sludges and slurries)

Waste Treatment Methods

Air Emissions Treatment

A01 Flare

A02 Condenser

A03 Scrubber

A04 Absorber

A05 Electrostatic Precipitator

A06 Mechanical Separation

A07 Other Air Emission Treatment

Chemical Treatment

H040 Incineration--thermal destruction other than use as a fuel

H071 Chemical reduction with or without precipitation

H073 Cyanide destruction with or without precipitation

H075 Chemical oxidation

H076 Wet air oxidation

H077 Other chemical precipitation with or without pre-treatment

Biological Treatment

H081 Biological treatment with or without precipitation

Physical Treatment

H082 Adsorption

H083 Air or steam stripping

H101 Sludge treatment and/or dewatering

H103 Absorption

H111 Stabilization or chemical fixation prior to disposal

H112 Macro-encapsulation prior to disposal

H121 Neutralization

H122 Evaporation

H123 Settling or clarification

H124 Phase separation

H129 Other treatment

Section 7B. On-Site Energy Recovery Processes

U01 Industrial Kiln

U02 Industrial Furnace

U03 Industrial Boiler

Section 7C. On-Site Recycling Processes

H10 Metal recovery (by retorting, smelting, or chemical or physical extraction)

H20 Solvent recovery (including distillation, evaporation, fractionation or extraction)

H39 Other recovery or reclamation for reuse (including acid regeneration or other chemical reaction process)

Section 8.10. Source Reduction Activity Codes  
Good Operating Practices

W13 Improved maintenance scheduling, record keeping, or procedures

W14 Changed production schedule to minimize equipment and feedstock changeovers

W15 Introduced in-line product quality monitoring or other process analysis system

W19 Other changes in operating practices

Inventory Control

W21 Instituted procedures to ensure that materials do not stay in inventory beyond shelf-life

W22 Began to test outdated material - continue to use if still effective

W23 Eliminated shelf-life requirements for stable materials

W24 Instituted better labeling procedures

W25 Instituted clearinghouse to exchange materials that would otherwise be discarded

W29 Other changes in inventory control

Spill and Leak Prevention

W31 Improved storage or stacking procedures

W32 Improved procedures for loading, unloading, and transfer operations

W33 Installed overflow alarms or automatic shut-off valves

W35 Installed vapor recovery systems

W36 Implemented inspection or monitoring program of potential spill or leak sources

W39 Other changes made in spill and leak prevention

Raw Material Modifications

W41 Increased purity of raw materials

W42 Substituted raw materials

W43 Substituted a feedstock or reagent chemical with a different chemical

W49 Other raw material modifications made

Process Modifications

W50 Optimized reaction conditions or otherwise increased efficiency of synthesis

W51 Instituted recirculation within a process

W52 Modified equipment, layout, or piping

W53 Use of a different process catalyst

W54 Instituted better controls on operating bulk containers to minimize discarding of empty containers

W55 Changed from small volume containers to bulk containers to minimize discarding of empty containers

W56 Reduced or eliminated use of an organic solvent

W57 Used biotechnology in manufacturing process

W58 Other process modifications

Cleaning and Degreasing

W59 Modified stripping/cleaning equipment

W60 Changed to mechanical stripping/cleaning devices (from solvents or other materials)

W61 Changed to aqueous cleaners (from solvents or other materials)

W63 Modified containment procedures for cleaning units

W64 Improved draining procedures

W65 Redesigned parts racks to reduce drag out

W66 Modified or installed rinse systems

W67 Improved rinse equipment design

W68 Improved rinse equipment operation

W71 Other cleaning and degreasing modifications

Surface Preparation and Finishing

W72 Modified spray systems or equipment

W73 Substituted coating materials used

W74 Improved application techniques

W75 Changed from spray to other system

W78 Other surface preparation and finishing modifications

Product Modifications

W81 Changed product specifications

W82 Modified design or composition of products

W83 Modified packaging

W84 Developed a new chemical product to replace a previous chemical product

W89 Other product modifications

Section 8.10. Methods Used to Identify Source Reduction Activities

For each source reduction activity, enter up to three of the following codes that correspond to the method(s) which contributed most to the decision to implement that activity.

T01 Internal Pollution Prevention Opportunity Audit(s)

T02 External Pollution Prevention Opportunity Audit(s)

T03 Materials Balance Audits

T04 Participative Team Management

T05 Employee Recommendation (independent of a formal company program)

T06 Employee Recommendation (under a formal company program)

T07 State Government Technical Assistance Program

T08 Federal Government Technical Assistance Program

T09 Trade Association/Industry Technical Assistance Program

T10 Vendor Assistance

T11 Other

Reporting the Waste Management of Metals

This appendix outlines how the TRI-MEweb reporting software restricts reporting for metals when the specific data element or waste management code is not applicable for a particular chemical. Below is a list of metals divided into four groups along with charts that help explain where quantities of these chemicals can and cannot be reported on the Form R using TRI-MEweb. In addition, there are charts that explain restrictions on reporting waste management codes for the toxic chemicals in each of the four groups. This appendix only shows where reporting is restricted in TRI-MEweb, it does not indicate every situation where a metal should not be reported in a specific section of the form. For example, TRI-MEweb does not restrict the reporting of most individually-listed metal compounds as used for energy recovery (Sections 8.2 and 8.3) even though some of these chemicals do not have a heat value greater than 5000 British thermal units (Btu) and, thus, cannot be combusted for energy recovery. It is left to the facility to decide which of these toxic chemicals can be used for energy recovery. If you are not using TRI-MEweb this appendix can serve as a guide to help you understand where it is not appropriate to report certain quantities of toxic chemicals or waste management codes on your Form R.

Parent Metals:

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium

Cobalt

Copper

Lead

Manganese

Mercury

Nickel

Selenium

Silver

Thallium

Metal Compound Categories:

Antimony Compounds

Arsenic Compounds

Barium Compounds

Beryllium Compounds

Cadmium Compounds

Chromium Compounds

Cobalt Compounds

Copper Compounds

Lead Compounds

Manganese Compounds

Mercury Compounds

Nickel Compounds

Selenium Compounds

Silver Compounds

Thallium Compounds

Vanadium Compounds

Zinc Compounds

Metals with Qualifiers:

Aluminum (fume or dust)

Vanadium (except when in an alloy)

Zinc (fume or dust)

Individually-Listed Metal Compounds:

Bis(tributylin) oxide

Triphenyltin hydroxide

Triphenyltin chloride

Molybdenum trioxide

Thorium dioxide

Asbestos (friable)

Aluminum oxide (fibrous forms)

Tributyltin fluoride

Tributyltin methacrylate

Titanium tetrachloride

Boron trifluoride

Metiram

Boron trichloride

Zineb

Maneb

Fenbutatin oxide

Iron pentacarbonyl

Ferbam

C.I. Direct Brown 95

Osmium tetroxide

Aluminum phosphide

C.I. Direct Blue 218

Sections 5.3 - Discharges to Water and 6.1 - Transfers to POTWs

The following chart indicates which metals can be reported as released to water in Section 5.3 or to POTW’s in Section 6.1. Only zinc (fume or dust) and aluminum (fume or dust) are not reported in these sections because the fume or dust form of a toxic chemical cannot exist in water.

| Form R Section in Part II | Parent Metals | Metal Category Compounds | Metals with Qualifiers | Individually-listed Metal Compounds |
| --- | --- | --- | --- | --- |
| Section 5.3 - Discharges to receiving streams or water bodies | All | All | Vanadium (except when contained in an alloy) | All except Asbestos |
| Section 6.1- Discharges to POTWs | All | All | Vanadium (except when contained in an alloy) | All except Asbestos |

Section 6.2. Transfers to Other Off-Site Locations

Any toxic chemical may be reported in Section 6.2. However, TRI-MEweb will not allow certain M codes to be used when reporting metals. The chart below indicates which M codes can be reported in Section 6.2 for the four groups of metals. Note that all disposal M codes other than M41 and M62 can be used for all toxic chemicals. Code M24 is only made available for the four groups of metals.

| Waste Management Code for Section 6.2 | Parent Metals | Metal Category Compounds | Metals with Qualifiers | Individually-listed Metal Compounds |
| --- | --- | --- | --- | --- |
| M41 and M62 (disposal codesfor metals only) | All | All | Vanadium (except when contained in an alloy) | All except Asbestos |
| M56 and M92 (energy recovery codes) | None | None | None | All except Asbestos1 |
| M20 and M28 (recycling codes) | None | None | None | All |
| M24, M26 and M93 (recycling codes) | All | All | All | All |
| M40, M50, M54, (treatment codes) | None | None | All except Vanadium (except when contained in an alloy) | All |
| M61, M69, M95 (treatment codes) | Barium2 | Barium Compounds2 | Same as above | All |

Section 7A. On-site Waste Treatment Methods and Efficiency

TRI-MEweb allows any toxic chemical to be reported in Section 7A, however, it limits reporting in two ways. First, TRI-MEweb limits the treatment codes that can be reported based on the General Waste Stream Code selected. If a TRI-MEweb user selects General Waste Stream code “A – Gaseous”, all Waste Treatment Codes are made available. However, if a user selects from the remaining three General Waste Stream Codes (W - Wastewater, L - Liquid waste streams, or S - Solid waste streams), the “Air Emissions Treatment” Waste Treatment Codes are not made available. Second, the software restricts reporting for certain toxic chemicals with qualifiers. When reporting zinc (fume or dust) or aluminum (fume or dust) TRI-MEweb will not allow the user to select General Waste Stream Codes W-Wastewater and L-Liquid waste streams because the fume or dust form of a toxic chemical cannot exist in a liquid or water waste. For asbestos (friable) only S - Solid or A - Gaseous can be selected. When reporting hydrochloric acid (acid aerosols) or sulfuric acid (acid aerosols) only A - Gaseous can be selected.

Section 7B. On-site Energy Recovery Processes

The chart below indicates which energy recovery codes can be reported in TRI-MEweb in Section 7B for the four groups of metals.

| Energy Recovery Code for Section 7B | Parent Metals | Metal Category Compounds | Metals with Qualifiers | Individually-listed Metal Compounds |
| --- | --- | --- | --- | --- |
| U01, U02, U03 | None | None | None | All except Asbestos1 |

Section 7C. On-site Recycling Processes

Any chemical can be reported in Section 7C. However, certain waste management codes should not be reported for certain toxic chemicals. The chart below indicates which codes can be reported in Section 7C when using TRI-MEweb.

| Recycling Code for Section 7C | Parent Metals | Metal Category Compounds | Metals with Qualifiers | Individually-listed Metal Compounds |
| --- | --- | --- | --- | --- |
| H10 (this code is for metals only) | All | All | All | All |
| H20 | None | None | None | All |
| H39 | All | All | All | All |

Section 8. Source Reduction and Recycling Activities

The chart below indicates which metals can be reported in Sections 8.2, 8.3, 8.6 and 8.7 of the Form R when using TRI-MEweb. Note that all toxic chemicals can be reported in Sections 8.1, 8.4, 8.5 and 8.8.

| Waste Management Activity | Parent Metals | Metal Category Compounds | Metals with Qualifiers | Individually-listed Metal Compounds |
| --- | --- | --- | --- | --- |
| Quantity used for energy recovery on site and off site (Sections 8.2 and 8.3) | None | None | None | All except Asbestos2 |
| Quantity treated for destruction on site and off site (Sections 8.6 and 8.7) | None except Barium2 | None except Barium Compounds2 | All except Vanadium (except when contained in an alloy) | All |

[[1]](#footnote-2)

1. 1 Although TRI-MEweb does not restrict reporting of most individually-listed metal compounds as transferred off site for energy recovery, only chemicals with a heat value greater than 5000 British thermal units that are combusted in a device that is an industrial furnace or boiler (40 CFR Section 372.3) should be reported as used for energy recovery.

   2 The toxic chemical category barium compounds (N040) does not include barium sulfate. Because barium sulfate is not a listed toxic chemical, the conversion in a waste stream of barium or barium compound to barium sulfate is considered treatment for destruction (40 CFR Section 372.3). [↑](#footnote-ref-2)