



# **TOXICS RELEASE INVENTORY**

## **Guidance for Reporting Metals Waste Information**

Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) requires certain facilities manufacturing, processing, or otherwise using listed toxic chemicals to report the annual quantity of such chemicals entering each environmental medium to the TRI. Such facilities must also report pollution prevention and recycling data for such chemicals, pursuant to section 6607 of the Pollution Prevention Act, 42 U.S.C. 13106. EPCRA section 313 is also known as the Toxics Release Inventory (TRI).

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## DISCLAIMER

This document is intended to assist industry by providing guidance for reporting information to EPA on the waste management of metals included on the Toxics Release Inventory (TRI) list of toxic chemicals. The guidance contained herein is subject to change, does not supersede any statutory or regulatory requirements, and is not independently binding on either EPA or facilities subject to TRI reporting. Additionally, if a conflict exists between guidance stated herein and the statutory or regulatory requirements, the conflict must be resolved in favor of the statute or regulation.

Although EPA encourages industry to consider the guidance contained in this document when complying with the TRI reporting requirements for metals, when using this document, industry should be aware that this guidance was developed to address common circumstances at typical facilities. Facilities are encouraged to contact the Agency with any additional or clarifying questions about the guidance in this document, or if the facility believes that EPA has incorrectly characterized a particular process or recommendation.

Additional guidance documents, including industry specific and chemical specific guidance documents, are also available on TRI's GuideME website:

[https://ordspub.epa.gov/apex/guideme\\_ext/f?p=guideme:gd-list](https://ordspub.epa.gov/apex/guideme_ext/f?p=guideme:gd-list)

## SECTION 1.0 INTRODUCTION

This document provides guidance for disclosure of information specific to metals and Toxics Release Inventory (TRI) reporting<sup>1</sup> for facilities to use when preparing a TRI Form R report. For background information on the TRI Program, resources for determining whether a facility is required to report, and reporting requirements, please refer to the current TRI Reporting Forms and Instructions, also available on GuideME.

Information is also included on how the TRI-MEweb reporting software restricts reporting for metals when a specific data element or waste management code is not applicable for a particular chemical or chemical category.

This guidance document limits the set of chemicals defined as metals with reporting restrictions to those grouped as primary metals (elemental forms), metal compound categories, and metals and metal-containing compounds with TRI listing qualifiers, representing a total of 36 chemicals or chemical categories. This version removes individually listed chemicals containing metals that have no actual reporting restrictions. For example, boron trifluoride, C.I. Direct Blue 218, and several other chemicals are excluded, and an explanation is provided for the scope of this guidance. In addition, this updated guidance provides greater context in the form of definition, chemical listing descriptions, and references to additional resources.

### Section 1.1 Metals Definition

Metals are electropositive elements characterized by high electrical and thermal conductivity as well as by malleability, ductility, and high reflectivity of light. Unlike organic chemicals, metals are neither created nor destroyed by biological or chemical processes. However, these processes can transform metals from one species to another (such as changes in valence states) and can convert them between inorganic and organic forms. Some elements on the periodic table have properties of both metals and non-metals. These elements are often referred to as metalloids or semi-metals; examples include antimony, arsenic, and selenium. In this document, these elements are referred to as metals for sake of clarity.

Many chemicals and chemical categories on the TRI chemical list contain metals, but only some have restrictions for reporting waste management activities. The TRI Program groups those with restrictions into three categories as shown in the table below: parent metals (elemental forms), metal compounds, and metals and metal-containing compounds with qualifiers. Asbestos is included in this guidance because it is a silicate mineral containing magnesium and has characteristics and restrictions similar to those of other metal-containing compounds.

While some individually listed chemicals (e.g., dazomet sodium) contain metals such as sodium, calcium, or iron, there are no restrictions for reporting waste management of these chemicals. Guidance in this document pertains only to the subset of TRI-listed chemicals shown in the table below.

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<sup>1</sup> In this document TRI reporting refers to the information required to be disclosed under section 313 of the Emergency Planning and Community Right-to Know Act (EPCRA) and section 6607 of the Pollution Prevention Act (PPA).

Parent Metals (Elemental forms)	Metal Compound Categories	Metals and Compounds with Qualifiers
Antimony Arsenic Barium Beryllium Cadmium Chromium Cobalt Copper Lead Manganese Mercury Nickel Selenium Silver Thallium	Antimony Compounds Arsenic Compounds Barium Compounds (except for barium sulfate) <sup>1</sup> Beryllium Compounds Cadmium Compounds Chromium Compounds <sup>2</sup> Cobalt Compounds Copper Compounds <sup>3</sup> Lead Compounds Manganese Compounds Mercury Compounds Nickel Compounds Selenium Compounds Silver Compounds Thallium Compounds Vanadium Compounds Zinc Compounds	Aluminum (fume or dust) Asbestos (friable) <sup>4</sup> Vanadium (except when contained in an alloy) Zinc (fume or dust)
<p><sup>1</sup> The TRI chemical category barium compounds (N040) does not include barium sulfate (CAS No. 7727-43-7). Barium sulfate is not included on the TRI list of chemicals.</p> <p><sup>2</sup> The TRI chromium compounds chemical category (N090) excludes chromite ore mined in the Transvaal Region of South Africa and the unreacted ore component of the chromite ore processing residue (COPR).</p> <p><sup>3</sup> The TRI copper compounds chemical category (N100) does not include copper phthalocyanine compounds that are substituted with only hydrogen, and/or chlorine and/or bromine.</p> <p><sup>4</sup> Asbestos is a silicate mineral containing magnesium and has characteristics and restrictions similar to those of other metal-containing compounds.</p>		

## Section 1.2 General TRI Reporting Requirements of Metals

Facilities should refer to GuideME for current guidance on metals threshold determinations and specific reporting instructions. In general, if a facility exceeds thresholds for both the parent metal and compounds of that same metal, EPA allows you to file one combined report (e.g., one report for nickel compounds, including nickel) because the release information you will report in connection with the metal compound category will be the total pounds of the metal released. If you file one combined report, you should put the name of the metal compound category on the Form R. TRI-MEweb will prompt you to select a checkbox to indicate that the form contains reporting on both the parent metal and the metal compound (e.g., nickel and nickel compounds).

Some metal category compounds may contain more than one listed metal. For example, lead chromate is both a lead compound and a chromium compound. In such cases, if applicable thresholds are exceeded, you are required to file two separate reports, one for lead compounds and one for chromium compounds. In these cases, EPA recommends including a note in Section 9.1.

Note that only elemental metals without a chemical qualifier can be reported with their associated metal category compound on a combined Form R report. Elemental metals with qualifiers are only reportable if they are manufactured, processed, or otherwise used in a specific form(s) and cannot be reported with their associated metal compound category on the same Form R. For example, a facility that exceeds an activity threshold for both zinc (fume or dust) and zinc compounds must not report both zinc (fume or dust) and zinc compounds on the same Form R.

Specific guidance documents are also available for [lead and lead compounds](#) and [mercury and mercury compounds](#), which are chemicals of special concern and therefore have more stringent TRI reporting requirements.

## SECTION 2.0 GUIDANCE FOR REPORTING WASTE MANAGEMENT OF METALS

Below are tables that explain which elemental metals, metal compounds, and metal compounds with qualifiers can be reported in a TRI Form R report by specific waste management methods. Applicable waste management codes are described by TRI Form R section and for the toxic chemicals in each of the three metal groups defined in Section 1.1. While this document provides guidance for reporting metal waste management, it does not indicate every situation where a metal should not be reported in a specific section of the form.

### Sections 5.1–5.5: On-Site Releases and Disposal

There are no restrictions for reporting metals defined in Section 1.1 as released on site to air or disposed of on site to land. Restrictions related to water discharges are discussed in the following section.

### Section 5.3: Discharges to Receiving Streams or Water Bodies and Section 6.1 Discharges to Publicly Owned Treatment Works (POTWs)

The following table indicates which metals can be reported as discharged to receiving streams or water bodies in Section 5.3 or transferred to POTWs for disposal in Section 6.1 of the TRI Form R. Note that zinc (fume or dust), aluminum (fume or dust), and asbestos (friable) cannot be reported as directly discharged to water or transferred to a POTW. Generally, transfers of metals or their metal compounds to a POTW should only be reported as a disposal since the metal cannot be treated for destruction.

The direct discharge to water or transfer to a POTW that you report for metal category compounds (e.g., chromium compounds) will be the total mass quantity of the parent metal released and NOT the mass quantity of the metal category compound. For additional guidance on default POTW distribution percentages and assumptions used to calculate final waste management disposition of TRI chemicals, refer to the reporting form and instructions, [POTW percentages section](#).

Form R Section in Part II	Parent Metals	Metal Category Compounds	Metals and Compounds with Qualifiers
Section 5.3 - Discharges to receiving streams or water bodies	All	All	Vanadium (except when contained in an alloy)
Section 6.1- Discharges to POTWs: P30, P31, P32, P33, P34, P35, and P36 (disposal codes)	All	All	Vanadium (except when contained in an alloy)
Section 6.1- Discharges to POTWs: P37, P38, and P39 (treatment codes)	None	None	None
The applicable P codes for transfers of metals and metal category compounds in wastewater to a POTW for disposal include: P30 Discharged to Water Stream P31 Discharged to Other Activities P32 Released to Air P33 Sludge to disposal P34 Metals and metal compounds only – Sludge to incineration P35 Sludge to agricultural applications P36 Other or Unknown Disposal			

### **Example 1: Reporting Metals and Metal Category Compounds That Are Sent Off Site**

A facility manufactures a product containing elemental copper, exceeding the processing threshold for copper. Various metal fabrication operations for the process produce a wastewater stream that contains some residual copper and off-specification copper material.

- **Transfer to POTW:** The wastewater is collected and sent directly to a POTW. Periodic monitoring data show that 500 pounds of copper were transferred to the POTW in the reporting year. The POTW eventually releases all of the copper it received to a stream. The facility must report 500 pounds in Sections 6.1 (transfer code P30 (Discharged to water stream)), and TRI-MEweb auto-populates Section 8.1d for other off-site transfers for disposal.
- **Transfer to other off-site locations:** The off-specification products (containing copper) are collected and sent off site to a RCRA Subtitle C landfill. Sampling analyses of the product combined with hazardous waste manifests indicate that 1,200 pounds of copper in the product were sent to the off-site landfill. The facility reports 1,200 pounds in Sections 6.2 (waste code M65 (RCRA Subtitle C Landfill)), and TRI-MEweb auto-populates Section 8.1c for transfers for disposal at landfills.

### **Section 6.2: Transfers to Other Off-Site Locations**

Any chemical included on the TRI chemical list may be reported in Section 6.2. However, transfers for certain waste management purposes are not appropriate for metals. M codes are used for the reporting of quantities of TRI chemicals contained in waste transferred off site for further waste management. The table below indicates which M codes can be reported in Section 6.2 for the three groups of metals defined in Section 1.1.

Note that codes M41 and M62 are specifically for reporting metals sent for disposal via stabilization/solidification or wastewater treatment not at POTWs. For recycling, code M24, Metals Recovery, is specifically for metals management. If a code is not applicable to a certain TRI chemical, TRI-MEweb will not display the option in the dropdown menu for selecting the waste management type.

Type of Waste Management	Waste Management Code for Section 6.2	Parent Metals	Metal Category Compounds	Metals and Compounds with Qualifiers
Disposal	M41 and M62	All	All	Vanadium (except when contained in an alloy) <sup>2</sup>
	M10, M64-M67, M73, M79, M81, M82, M90, M94, M99	All	All	All
Treatment	M40, M50, M54	None	None	Aluminum (fume or dust) Asbestos (friable) Zinc (fume or dust) <sup>3</sup>
	M61, M69, M95	Barium <sup>1</sup>	Barium Compounds (except barium sulfate) <sup>1</sup>	
Energy Recovery	M56 and M92	None	None	None
Recycling	M20 and M28	None	None	None
	M24, M26, M93	All	All	All

<sup>1</sup> The toxic chemical category barium compounds (N040) does not include barium sulfate (CAS No. 7727-43-7). Because barium sulfate is not a listed toxic chemical, the conversion in a waste stream of barium or a barium compound to barium sulfate is considered treatment for destruction (40 CFR Section 372.3).

<sup>2</sup> Zinc (fume or dust), aluminum (fume or dust), and asbestos (friable) cannot be reported as transferred for waste management through solidification/stabilization or wastewater treatment.

<sup>3</sup> Metals and compounds with qualifiers can be reported as treated for destruction when they are converted to non-reportable forms in the waste stream.

The applicable M codes for transfers of metals and metal category compounds for off-site waste management include:

**Disposal**

- M10 Storage Only
- M41 Solidification/Stabilization - Metals & Metal Category Compounds only
- M62 Wastewater Treatment (Excluding POTW) - Metals & Metal Category Compounds only
- M64 Other Landfills
- M65 RCRA Subtitle C Landfills
- M66 Subtitle C Surface Impoundment
- M67 Other Surface Impoundments
- 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
- M94 Transfer to Waste Broker – Disposal
- M99 Management Method Unknown

**Treatment**

- M40 Solidification/Stabilization
- M50 Incineration/Thermal Treatment
- M54 Incineration/Insignificant Fuel Value
- M61 Wastewater Treatment (Excluding POTW)
- M69 Other Waste Treatment
- M95 Transfer to Waste Broker - Waste Treatment

**Recycling**

- M24 Metals Recovery
- M26 Other Reuse or Recovery
- M93 Transfer to Waste Broker – Recycling



## Section 7A: On-Site Waste Treatment Methods and Efficiency

For all Form R reports, reporters must indicate the type of waste stream and any treatment methods applicable to the stream. TRI-MEweb limits the reporting of on-site waste treatment of certain metals based on selection of General Waste Stream codes (A – Gaseous, W – Wastewater, L – Liquid waste stream, or S – Solid waste stream).

When reporting zinc (fume or dust) or aluminum (fume or dust), a reporter can only select A – Gaseous or S – Solid waste stream. The same restriction applies to reporting asbestos (friable) because asbestos in a liquid waste stream or wastewater is no longer friable.

## Section 7B: On-Site Energy Recovery Processes

Only chemicals with a significant heating value (e.g., 5,000 Btu/lb) 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. No on-site energy recovery activities can be reported for metals listed in Section 1.1.

## Section 7C: On-Site Recycling Processes

Any metal can be reported as recycled in Section 7C. However, the waste management code H20, Solvent Recovery, is not applicable to the metals defined in Section 1.1 of this document. Code H10, Metal Recovery, is specifically for metal waste management. The chart below indicates which on-site recycling codes can be reported in Section 7C for all metal groups.

Recycling Code for Section 7C	Parent Metals	Metal Category Compounds	Metals and Compounds with Qualifiers
H10 (for metals only)	All	All	All
H20	None	None	None
H39	All	All	All
The applicable H codes for on-site recycling of metals and metal category compounds include: H10 Metal recovery (by retorting, smelting, or chemical or physical extraction) H39 Other recovery or reclamation for reuse (including acid regeneration or other chemical reaction process)			

## Sections 8.1–8.7: Production-Related Waste Managed

The chart below summarizes which metals can be reported in Sections 8.1 through 8.7 of the Form R. TRI-MEweb populates this reporting section based on the information reported in Sections 5, 6, and 7 corresponding to direct discharges, transfers to POTWs and other waste management facilities, and any on-site waste management activities. Refer to earlier sections of this guidance for specifics about applicable reporting codes. Note that all chemicals included on the TRI chemical list can be reported as managed for disposal in Sections 8.1 or managed for recycling in Sections 8.4 and 8.5. Generally, metals have no heat value and thus cannot be combusted for energy recovery and cannot be treated because they cannot be destroyed. A few exceptions are noted below.

Waste Management Activity	Form R Section	Parent Metals	Metal Category Compounds	Metals and Compounds with Qualifiers <sup>3</sup>
Disposal and Other Releases	On-site, Section 8.1a-b Off-site, Section 8.1c-d	All	All	Air/Land – All
				Water/POTW - Vanadium (except when contained in an alloy)
Energy Recovery <sup>1</sup>	On-site, Section 8.2 off-site, Section 8.3	None	None	None
Recycling	On-site, Section 8.4 Off-site, Section 8.5	All	All	All
Treatment (for destruction)	On-site, Section 8.6 Off-site, Section 8.7	Barium <sup>2</sup>	Barium Compounds (except barium sulfate) <sup>2</sup>	Aluminum (fume or dust) Asbestos (friable) Zinc (fume or dust)

<sup>1</sup> Metals should be reported as transferred off-site for energy recovery. Only those chemicals with significant heat value (e.g., 5,000 Btu/lb) 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.

<sup>2</sup> 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).

<sup>3</sup> Metals and compounds with qualifiers (i.e., fumes or dusts) can be reported as treated for destruction when they are converted to non-reportable forms in the waste stream.