



OFFICE OF INSPECTOR GENERAL

*Catalyst for Improving the Environment*

## **Memorandum Report**

# **EPA Should Take Steps to Improve Industrial Reporting to the Toxics Release Inventory System**

**Report No. 2004-P-00004**

**February 2, 2004**

**Report Contributors:**

Anthony Chirigotis  
Linda Fuller  
Ira Brass

**Abbreviations**

EPA	Environmental Protection Agency
OEI	Office of Environmental Information
OIG	Office of Inspector General
POTW	Publicly Owned Treatment Works
TRI	Toxics Release Inventory



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF  
INSPECTOR GENERAL

February 2, 2004

**MEMORANDUM**

**SUBJECT:** EPA Should Take Steps to Improve Industrial Reporting to the  
Toxics Release Inventory System  
Report No. 2004-P-00004

**FROM:** Dan Engelberg /s/  
Director of Program Evaluation, Water Issues  
Office of Program Evaluation (2460T)

**TO:** Kim T. Nelson  
Assistant Administrator  
Office of Environmental Information (2810A)

This is our final report on the subject evaluation conducted by the Office of Inspector General (OIG) of the U.S. Environmental Protection Agency (EPA). This evaluation report contains findings that describe the problems the OIG has identified and corrective actions the OIG recommends. This evaluation report represents the opinion of the OIG and the findings contained in this report do not necessarily represent the final EPA position. Final determinations on matters in this evaluation report will be made by EPA managers in accordance with established audit resolution procedures.

While conducting a review of the EPA's pretreatment program, the OIG identified errors in industrial user reporting. In some cases, these errors overstated the amount of pollutants reported as being transferred to wastewater treatment facilities, with a dramatic impact on overall national results. Additionally, EPA's Toxics Release Inventory (TRI) Explorer database had not specifically identified metals transferred to wastewater treatment facilities, to better show that these pollutants of concern are being received by the facilities and eventually being discharged to the receiving waters. According to EPA, Federal, State, and local governments have used TRI to set priorities, measure progress, and target areas of special and immediate concern. Also, the public has used the TRI data to understand their local environment and to participate in debates of concern. Therefore, it is important to have accurate and clearly described data for use by both the public and government agencies.

The overall purpose of our review, which is still ongoing, is to determine how effective the pretreatment program has been in reducing the transfer of industrial pollutants to wastewater treatment facilities (also referred to as publicly owned treatment works, or POTWs). As part of this review, we have used EPA's TRI database system to develop national trends in the transfer of pollutants to POTWs. An additional report on our review of the pretreatment program is planned, with recommendations to be directed to the Office of Water. Details on background, as well as our scope and methodology, are in Appendix A.

We are issuing this separate report to offer recommendations to assist your staff in preventing further errors of the type identified in this report. We also wish to document these errors for others who may be using the TRI database. EPA's Office of Water, which planned to use TRI as one of its data sources in developing a new plan for effluent guidelines, has already contacted us to discuss the scope of our work. Because we did not conduct an audit of the TRI system, we cannot express an opinion on the overall reliability of TRI data quality.

The Office of Environmental Information's (OEI's) Director of the Office of Information Analysis and Access responded to our draft report on December 17, 2003. The Director said action will be taken to obtain corrected data from the cited companies. Additionally, a column identifying metals transferred to POTWs was added to the TRI Explorer database in November 2003. OEI's response to the issues and recommendations in our draft, as well as our comments on that response, are contained in this report. An exit conference was held on January 13, 2004.

## **Action Required**

In accordance with EPA Manual 2750, you are required to provide a written response to this report within 90 calendar days of the date of this report. You should include a corrective actions plan for agreed upon actions, including milestone dates. We have no objections to the further release of this report to the public. For your convenience, this report will be available at <http://www.epa.gov/oig>. In addition to providing a written copy of your response, please e-mail an electronic version to [Fuller.Linda@epa.gov](mailto:Fuller.Linda@epa.gov).

If you or your staff have any questions, please contact me at (202) 566-0830 or Linda Fuller, Project Manager, at (617) 918-1485.

## **Issues**

### ***Incorrect Completion of TRI Form R***

Seven industrial users incorrectly reported transfers of copper, lead, chromium, and silver to private recovery or recycling companies as transfers to POTWs. As a result, reports from EPA database systems were overstated by 1,165,258 pounds. Six of the seven companies contacted confirmed that their TRI Form Rs were in error; we could not verify the TRI error with the seventh firm directly. Nevertheless, the facility, identified as the POTW receiving transfers from the seventh firm on Form R,

confirmed they are a pretreatment facility that accepts transfers from the seventh firm for treatment and that they are not a POTW. The Acting Associate Director of EPA's TRI Program Division stated that “these errors would not necessarily get caught because we have no reason to dispute what the facilities have reported.” As already noted, this office as well as other EPA offices use TRI data for program analysis, and such errors will affect conclusions.

We documented the transfer to POTWs of six metals that are potentially of concern to all POTWs (cadmium, chromium, copper, lead, nickel, and zinc); three additional pollutants that all POTWs should presume to be of concern (arsenic, mercury, and silver); and a conventional pollutant (ammonia). EPA identified metals as pollutants of concern because they are often found in POTW sludge and effluent, while ammonia was included because of its large amounts of loading to POTWs and the potential environmental effects when in excess. For the period 1991 to 2000, we sampled the years 1991, 1993, 1995, 1997, 1999, and 2000. We found significant increases over time and spikes (one-year increases) in some of the metals transferred, as seen in the following chart:

<b><i>Increases from 1997 - 1999</i></b>	
Copper	42%
Silver	126%
<b><i>Increases from 1999 - 2000</i></b>	
Copper	9%
Silver	63%
<b><i>Spikes in 1999</i></b>	
Lead	850%
Chromium	167%

Upon further analysis to determine the reason for the increases or spikes, we discovered that the source documentation had not been correctly completed by seven industrial users. These users entered the name of the private recovery or recycling company receiving the waste on line 6.1 of Form R, which is reserved for POTWs, rather than line 6.2, which is for transfers to other off-site locations. Appendix B provides details for each facility.

On June 6, 2003, we notified the Directors of the TRI Division and the Toxics and Pesticides Enforcement Division of the errors made by the first five companies listed in Appendix B. We subsequently found two other facilities with similar errors, which are also in Appendix B. The TRI Division staff advised us that they had contacted the five companies and requested revised Form Rs. As of October 7, 2003, EPA's TRI Data Processing Center had received only one revised Form R from the facilities, so the system had yet to be completely updated. In our opinion, it is important to

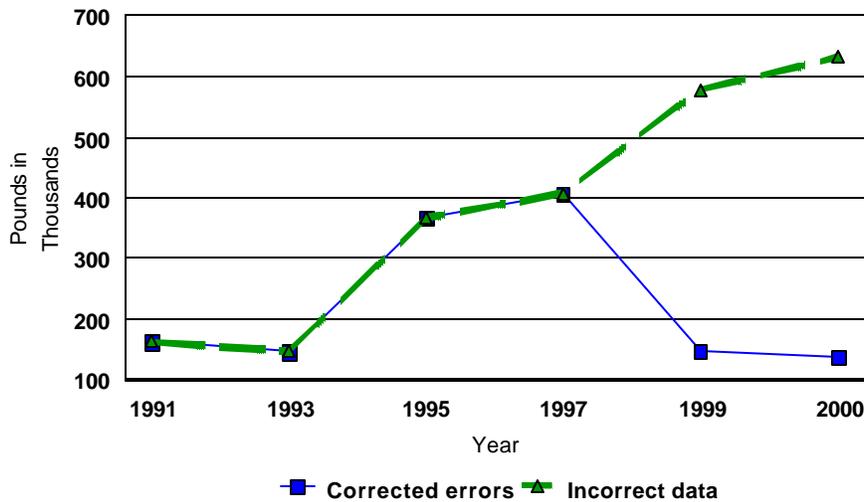
promptly correct the TRI database, and the Agency needs to be more aggressive in obtaining corrected Form Rs. We verified that the companies that received the metals were metals recovery, recycling, or pretreatment facilities, not POTWs, and followup by TRI Division staff did not dispute this conclusion.

The errors resulted in overstatements of metal transfers to POTWs as seen in the following chart:

Pollutant	Pounds Overstated	Percentage of Difference
Chromium (1999)	81,092	176 %
Copper (1999)	430,000	289 %
Copper (2000)	492,969	355 %
Lead (1999)	160,000	890 %
Silver (1999)	250	22 %
Silver (2000)	947	74 %
<b>Total Pounds</b>	<b>1,165,258</b>	

While the number of errors noted was small, they made a significant impact on determining trends in transfers to POTWs. As an example, the following chart shows a significant increase in copper transfers to POTWs per the erroneous data when in fact transfers declined.

**Copper Transfers to POTWs**



Although our work did not constitute a formal or comprehensive audit of the TRI submissions, we were able to easily note these errors by simply identifying significant increases/spikes. We then determined where the transfers were going; the receiving facilities' names usually indicated whether or not they were POTWs. With the assistance of auditing software to flag significant changes, we

believe TRI Division staff can also do this to enhance data quality reviews.

## ***Need to Identify Metals/Metal Compounds Transferred to POTWs***

TRI Explorer reports did not specifically identify metals/metal compounds transferred to POTWs. Such a category would be useful to both (1) the public, which is interested in knowing what is being transferred to its local POTW; and (2) EPA program staff conducting various evaluations. Past limited funding prevented the development of such a category, according to OEI staff.

Metals that are transferred to POTWs are included in the grand total for “Off-site Releases.” However, this category may also include transfers to non-POTW facilities; there is no column showing a further breakdown of metals transferred to POTWs. There is a column, “Transfers to POTWs,” on TRI Waste Transfer: Facility Reports, but metals are not included because they are considered a release rather than a transfer. According to EPA’s “The Toxics Release Inventory (TRI) and Factors to Consider When Using TRI Data” guide, metals are not included in transfers to POTWs because they cannot be destroyed by a POTW; the metals will be either disposed of in landfills or discharged to receiving waters. Therefore, the amounts that industrial users report as transfers to POTWs on TRI Form R are entered by EPA to the “Off-site Releases” column of its Releases: Facility Reports.

To get a full picture of what pollutants are being transferred to POTWs, we used EPA’s Envirofacts database, which reports metals transferred to POTWs. The information in Envirofacts is obtained from TRI Form R. The following chart for one company shows that Envirofacts reported all the pollutants, including metals discharged to the local POTW, while TRI Explorer could not.

<b><i>Transfers of Pollutants from Sheldahl, Inc. to Northfield, MN POTW, 1987 - 2001</i></b>	
<b><i>Pollutants Transferred to POTW per EPA’s Envirofacts Database</i></b>	<b><i>Pollutants Transferred to POTW per EPA’s TRI Explorer Database</i></b>
Ammonia	Ammonia
Certain Glycol Ethers	Certain Glycol Ethers
Thiourea	Thiourea
Hydrochloric Acid	Hydrochloric Acid
Sulfuric Acid	Sulfuric Acid
Nitric Acid	Nitric Acid
Nitrate Compounds	Nitrate Compounds
Copper Compounds	
Lead Compounds	

Region 1’s Pretreatment Coordinator commented that he would like to use TRI for pretreatment studies, but the system did not show metals being transferred to POTWs. On September 10, 2003, the TRI Division Computer Specialist/Database Administrator agreed that an additional column clearly

showing metal transfers to POTWs was needed, and the Division's staff had previously identified it as a problem. He said "money is the reason it hasn't already been corrected," and anticipated that it would be fixed in 2003. In responding to our draft, OEI stated that this column was added in November 2003.

## **Recommendations**

We recommend that the Assistant Administrator, Office of Environmental Information:

1. Provide a schedule showing actions taken and planned, along with milestones for obtaining by July 2004 corrected TRI Form Rs, for the seven cases identified in our report.
2. Note on web site that the figures in TRI reports using the erroneous data identified in this report are subject to change until corrected TRI Form Rs are received.
3. Determine why the current software did not flag the spikes and increases identified by the OIG and explain how the software will be enhanced.
4. Determine whether TRI Form R should be revised to reduce industry completion errors during the next Information Collection Renewal period.

## ***OEI Comments and OIG Evaluation***

OEI agreed that these types of errors decreased TRI data quality and utility. While noting that it is the responsibility of the facilities who file TRI Form Rs to ensure that the information is correct, OEI identified some examples of compliance assistance provided to facilities to minimize reporting errors. The full text of OEI's response, including these examples, are in Appendix C.

OEI stated that it cannot correct the TRI database without corrected TRI Form Rs from the companies. Within the past year, OEI staff said they had called the seven companies and requested revised Form Rs. As of December 17, 2003, only one company had submitted a revised Form R. OEI stated that it will try to contact the facilities again to encourage them to correct their reports.

OEI also stated that they do have audit software to identify spikes, etc., for further evaluation, but will enhance this functionality specifically for facilities that report transfers of metals/metal compounds to POTWs. OEI will also try to identify and propose changes to Form R during the next Information Collection Renewal period.

The OIG has revised Recommendation 1 to acknowledge that OEI cannot change the TRI database without corrected Form Rs from the seven companies. However, while it is the responsibility of the reporting companies to submit accurate forms, OEI does conduct data quality reviews to ensure that reported data are accurate and may refer recalcitrant companies to the Office of Enforcement and Compliance Assurance for enforcement. We now recommend that OEI be more aggressive in

following its procedure for obtaining accurate data. We added another recommendation that OEI note on its web site that TRI reports using the erroneous data identified in this report are subject to revision.

The OIG concurs with OEI's response to enhance its software to identify the types of errors found in this report and to review Form R for revision during the next Information Collection Renewal period.

Since issuance of our draft report, the column identifying metals transferred to POTWs has been added to the TRI Explorer Reports. As a result, we have deleted our recommendation regarding this issue.



## ***Background, Scope, and Methodology***

### **Background**

The Toxics Chemical Release Inventory System is a database that contains the information submitted by facilities under Section 313 of the Emergency Planning Community Right-to-Know Act of 1986. A facility that is required to report must submit either a Toxics Chemical Release Inventory Form R or, if the facility did not exceed certain threshold requirements, a Form A for each TRI-listed chemical. Form R reports basic identifying information on the facility as well as the amounts of toxic chemicals released and transferred from the facility. Copies of the TRI Forms must be submitted to both the appropriate State agency and to EPA Headquarters by July 1 of each year for the previous reporting year. Information from the reporting forms is entered into the Toxics Chemical Release Inventory System database only by EPA Headquarters, not by State agencies.

Facilities that report to TRI must meet the following three criteria:

1. Fit a specific Standard Industrial Classification or other selected industrial category. Federal facilities must report to TRI regardless of the classifications.
2. Have 10 or more full-time employee equivalents.
3. For all but certain persistent bioaccumulative toxic chemicals, manufacture or process more than 25,000 pounds or otherwise use more than 10,000 pounds of any listed chemical during the calendar year.

The TRI list for 2001 included more than 600 chemicals and 30 chemical categories.

### **Scope and Methodology**

During the course of our evaluation of EPA's pretreatment program (June 2002 to October 2003), we reviewed TRI data to develop national trends in transfer of pollutants to POTWs. We also obtained data on selected POTWs with industrial users from Regions 2, 5, and 6. We reviewed annual pretreatment reports prepared by the POTWs, which sometimes identified pollutants being transferred to the POTWs from influent data.

We conducted our review in accordance with *Government Auditing Standards*, issued by the Comptroller General of the United States. For our segment on TRI, we gained a basic understanding of how the system works. Since TRI was only one source of data we were to use in reaching our conclusions, an overall data reliability assessment of TRI was not conducted. Data verification was

limited to specific cases under review. Therefore, we never intended, and do not express, an opinion on TRI data reliability in general.

The following sections describe how we identified the issues in this report.

### ***Incorrect Completion of TRI Form R***

The Computer Specialist/Database Administrator of the TRI Division provided us with a file based on TRI data contained within Envirofacts from industries identified by their 4-digit Standard Industrial Classification codes associated with the original industries reporting to TRI. The data were limited to POTW transfer information from these industries, with the exception of the variable for “metal compounds,” for the reporting years of 1991 through 2000. This information was used to identify general trends in industrial transfers of pollutants of concern to POTWs. A pollutant of concern is a pollutant that might reasonably be expected to be discharged to the POTW in amounts to pass through or interfere with the works, contaminate sludge, cause problems in the collection system, or jeopardize workers.

We prepared spreadsheets of transfers to POTWs for the following 11 pollutants of concern: ammonia, arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc. Total transfer amount and subsequent trends for industries identified by their 4-digit Standard Industrial Classification code were scheduled in 2-year increments. The years selected were 1991, 1993, 1995, 1997, 1999, and 2000.

The spreadsheets identified spikes for chromium, lead, and selenium, and increases for arsenic, copper, mercury, and silver. For these spikes and increases, we reviewed TRI Form R, Section 6.1, “Discharges to Publicly Owned Treatment Works (POTWs),” to identify the POTWs receiving the reported increase. For chromium, lead, copper, and silver, we noted that the names included in Section 6.1 were not for POTWs but private companies. We then verified that the company receiving wastes was not a POTW by Internet or by phone calls and e-mails requesting verification. The fact that we identified errors in these reports cannot be taken as evidence that those are the only errors in this database.

### ***Need to Identify Metals/Metal Compounds Transferred to POTWs***

We noted that metals that were transferred to our selected POTWs as reported in POTW annual pretreatment reports and EPA’s Envirofacts database did not appear in TRI Explorer Waste Transfer Reports. For criteria, we reviewed EPA’s “The Toxics Release Inventory (TRI) and Factors to Consider When Using TRI Data,” and report definitions found at the end of TRI Explorer reports. We also discussed this issue with the Computer Specialist/Database Administrator of the TRI Division. We reviewed TRI Explorer Waste Transfer and Release reports and TRI Form Rs prepared by industrial users.

## **Identification of Industrial Users Erroneously Completing TRI Form R**

<b>TRI Facility ID No.</b>	<b>Facility Name</b>	<b>Year</b>	<b>Metal Reported Transferred to POTW</b>	<b>Amount Reported as Transferred *</b>
<b>Form R Completion Errors Initially Noted</b>				
30318LLDFD1450H	Allied Foods, LLC, Atlanta, GA	1999	Copper	330,000 lbs.
		2000	Copper	352,261 lbs.
29693STLHDPOBOX	Ulbrich Precision Flat Wire, Westminster, SC	1999	Copper	100,000 lbs.
		2000	Copper	100,000 lbs.
06497BRDGP514SU	Bridgeport Insulated Wire Co., Stratford, CT	2000	Copper	40,708 lbs.
75461CMPBL500NW	Campbell Soup Supply Co., Paris, TX	1999	Lead	160,000 lbs.
76110HYSST3521H	Hayes & Stolz Indl. Mfg. Co., Inc., Fort Worth, TX	1999	Chromium	81,092 lbs.
<b>Additional Form R Completion Errors</b>				
25143CTLYS1580F	Catalyst Refiners, Nitro, WV	1999	Silver	250 lbs.
		2000	Silver	250 lbs.
02703NGNRD39PER	Engineered Materials Solutions, Inc., Attleboro, MA	2000	Silver	697 lbs.

\* The actual transfers to POTWs in each case was zero.



## ***OEI's Response to OIG Draft Report***

### **MEMORANDUM**

**SUBJECT:** Response to Memorandum: "Toxics Release Inventory System Can Improve Industrial User Reporting and Metal Transfers Identification" (Assignment No. 2002-0000933), November 17, 2003

**FROM:** Elaine G. Stanley, Director  
Office of Information Analysis and Access (2841T)

**TO:** Dan Engelberg  
Director of Program Evaluation, Water Issues  
Office of Program Evaluation (2460T)  
Office of Inspector General

Thank you for your memorandum of November 17, 2003, to Kimberly T. Nelson, Assistant Administrator, Office of Environmental Information (OEI) regarding concerns about the quality of the Toxics Release Inventory (TRI) data for industries reporting transfers of metals to publicly owned treatment works (POTWs). The Assistant Administrator has requested that I respond on her behalf.

Your memorandum describes findings of an audit by the Office of Inspector General (OIG) that indicate that some facilities make errors in their annual TRI reporting of transfers of certain metals listed on the TRI list of toxic chemicals. To illustrate these findings, the memorandum specifically describes an example for reporting years 1999 and 2000 where seven facilities incorrectly reported transfers totaling 1,165,258 pounds of copper, lead, chromium, and silver as sent to POTWs when in fact these transfers were actually sent to privately owned recovery or recycling companies. As you clearly pointed out, these types of reporting errors decrease the quality of TRI data as well as the utility of the data in making informed decisions. This is important since TRI data are used to identify national trends in the transfer of toxic substances to POTWs to determine how effective EPA's Pretreatment Program has been in reducing the transfer of these substances to POTWs.

I appreciate your concerns. While it is the responsibility of the facilities who file TRI release reports to make sure that the information contained in the reports is correct, EPA's TRI Program has for many years been proactive in providing compliance assistance to facilities to help minimize reporting errors and improve the quality of TRI data. Some examples of the TRI Program's compliance assistance efforts include:

- C conducting compliance assistance workshops (held annually throughout the country);
- C developing materials that provide instructions on how to complete and submit a release report;
- C providing a “hotline,” which is designed to provide direct answers to questions posed by facilities;
- developing facility data profiles to allow facilities the opportunity to review and correct the data they have submitted prior to it being made available to the public;
- reviewing submitted Form R release reports (prior to making data available to the public) to see if data appear correct, and conducting data quality calls to those facilities who appear to have made errors in their reports.

Your memorandum provides four recommendations for the TRI Program to follow to correct the reporting error described in your memorandum, and to prevent this error from occurring in the future. The following are OEI responses to your recommendations:

1. Correct the TRI database using OIG work as support for the changes.

*Response:* EPCRA section 313 (j) requires that the TRI database be based on data submitted to the Agency under section 313. It is the TRI Program’s long-standing interpretation of section 313(j) that the TRI database should reflect data as submitted by facilities pursuant to the TRI reporting requirements. Consistent with this interpretation, the TRI Program does not believe that it should unilaterally make substantive changes to the database without receipt of a certified revision or withdrawal from the reporting facility. Changing data in one section of the Form R can cause discrepancies in other sections. For example, should EPA change an incorrectly designated transfer to a POTW from Section 6.1 to an Off-Site Transfer in Section 6.2, certain information would be missing such as the RCRA ID number of the off-site location. There may also be effects in Section 8 of the Form R which records source reduction and recycling activities. The TRI Program believes it is better for the reporting facility to make these corrections through a certified revision.

Within the past year, the TRI Program staff has called each of the seven facilities about these errors. Though all the facilities promised to send revised reports to the TRI Program, thus far only one revised report (from Hayes & Stolz Industrial Manufacturing Co., Inc., Fort Worth, Texas) has been received. The TRI Program will again try to contact these facilities to encourage them to correct their reports. The TRI Program will continue to track the progress of this effort.

2. Use auditing software to flag spikes and overall pollutant increases or decreases for further evaluation.

*Response:* The TRI Program currently does perform this evaluation, but will try to enhance this functionality specifically for facilities that report transfers of metals/metal compounds to POTWs. The TRI Program is continuously evaluating ways to improve their data quality verification process.

Also, the TRI-Program has recently developed an E-Gov award winning reporting software product called the Toxics Release Inventory - Made Easy (*TRI-ME*). *TRI-ME* is an interactive, intelligent, user-friendly software tool that guides facilities through the TRI reporting experience. By leading prospective reporters through a series of logically ordered questions, *TRI-ME* streamlines the user's analysis needed to determine if a facility must complete a Form R report or Form A Certification Statement for a particular chemical. *TRI-ME* will check the data for common errors and then prepare the forms, on paper, or magnetic media format, or electronically over the Internet via the EPA's Central Data Exchange (CDX) for submission to EPA.

3. Determine whether TRI Form R should be revised to reduce industry completion errors.

*Response:* EPA is always considering modifications to the TRI Form R to make completion of the form easier and to reduce the likelihood of making reporting errors. As part of the Information Collection Request (ICR) renewal process, the Form R is periodically renewed, often with some modification. EPA and OMB are currently well into the renewal process of the current Form R. However, for the next ICR renewal period, EPA will try to identify and propose changes to the Form R that deal with preventing the type of error described in the OIG memorandum.

The TRI Program is committed to making the completion of the Form R easier for facilities, while at the same time improving the quality of the submitted data. Also, as mentioned in the response above, the *TRI-ME* software product plays a big role toward achieving these goals.

4. Add a column to TRI Explorer reports showing metals/metals compound transfers to POTW.

*Response:* TRI Explorer already contains a column for facility-specific, industry-specific, or chemical-specific transfer quantities of metal, metal compound, or other listed toxic chemicals to POTWs. This information can be sorted on the state, county or zip code geographic level.

In addition to the TRI Program's activities and responses mentioned above, the TRI Program will consider implementing the following measures to help prevent the reporting error described in your memorandum from occurring in the future:

- C Make an announcement on the EPA TRI website alerting facilities not to make this type of reporting error;
- C Alert facility representatives who attend TRI training workshops about this type of reporting error; and
- C Contact stakeholders and trade associations, and inform them that this type of error has occurred.

Thank you again for your memorandum. If you need more information, or have any other questions please contact me at (202) 566-0600, or have your staff contact John Dombrowski of the TRI Program at (202) 566-0742.

cc: Kimberly T. Nelson, OEI (mail code 2810A)  
Jeff Worthington, OEI/OPRO (mail code 2812T)

## ***Distribution***

Assistant Administrator for Water (4101M)

Assistant Administrator for Research and Development (8101R)

Comptroller (2731A)

Agency Audit Followup Coordinator (2724A)

Audit Followup Coordinator for Office of Environmental Information (2812T)

Associate Administrator for Congressional and Intergovernmental Relations (1301A)

Associate Administrator, Office of Public Affairs (1101A)

Director, Office of Information Analysis and Access (2841T)

Director, Toxics Release Inventory Program Division (2844T)

Inspector General (2410)