

# Y-12

## OAK RIDGE Y-12 PLANT

LOCKHEED MARTIN



MANAGED BY  
LOCKHEED MARTIN ENERGY SYSTEMS, INC.  
FOR THE UNITED STATES  
DEPARTMENT OF ENERGY

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### TOXICS RELEASE INVENTORY EXPANSION RULE PHASE 3 (TRI-P3)

September 1998

R. A. Evans  
Environment, Safety, and Health Organization  
Y-12 Plant

A. D. Saunders  
Office of Environmental Protection  
Lockheed Martin Energy Research

G. G. Worley  
Emergency Management Program Organization  
Y-12 Plant

Prepared by the  
Oak Ridge Y-12 Plant  
Oak Ridge, Tennessee 37831  
managed by  
Lockheed Martin Energy Systems, Inc.  
for the  
U.S. DEPARTMENT OF ENERGY  
Under Contract No. DE-AC05-84-OR21400

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## ACRONYMS

ANPR	Advance Notice of Proposed Rulemaking
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
DOE-ORO	U.S. Department of Energy, Oak Ridge Operations Office
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act of 1986
ETTP	East Tennessee Technology Park
HEPA	High-Efficiency Particulate Air (Filter)
HMIS	Hazardous Materials Information System
NPDES	National Pollutant Discharge Elimination System
ORNL	Oak Ridge National Laboratory
ORR	Oak Ridge Reservation
OSHA	Occupational Safety and Health Act of 1970
RCRA	Resource Conservation and Recovery Act of 1976
SIC	Standard Industrial Classification
TRI	Toxic Release Inventory
TRI-P3	Toxic Release Inventory-Phase 3
TSCA	Toxic Substances Control Act of 1976
TURA	Toxics Use Reduction Act
WOD	White Oak Dam

## EXECUTIVE SUMMARY

The Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), Section 313, requires Toxic Release Inventory (TRI) reporting by industries in specified Standard Industrial Classification Codes (SICs). Executive Order (EO) 12856 extends that reporting requirement to all federal facilities, regardless of types of work performed. The Environmental Protection Agency (EPA) has been expanding the scope of TRI reporting in a three-phased series of regulatory revisions, as described below:

1. Phase 1, October 1996, added 286 additional chemicals to the list of reportable chemicals;
2. Phase 2, May 1997, required seven additional industry groups to file annual TRI reports; and
3. Phase 3, as announced in an October 1996 Advance Notice of Proposed Rulemaking (ANPR), would require reporting of additional materials accounting data at reporting facilities.

Prior to finalizing TRI Phase 3 (TRI-P3), the EPA is studying the burden that it would place on industry, as well as the feasibility for reporting facilities to provide chemical use data on expanded TRI reporting forms, such as are already used in the states of Massachusetts and New Jersey.

The Department of Energy (DOE) is among the industry groups participating in TRI-P3 pilot studies, and the Oak Ridge Reservation (ORR) was one of the DOE reporting facilities identified to carry out the reporting process prior to final rule promulgation. ORR TRI reporting personnel, through DOE Oak Ridge Operations (DOE-ORO) staff, have frequently commented during the public comment period on the anticipated impact of proposed rules. This pilot project has

provided the opportunity to apply and comment on the rule's impact, while simultaneously benefitting the EPA in their final rulemaking agenda.

The ORR [East Tennessee Technology Park (ETTP), Y-12 Plant, and Oak Ridge National Laboratory (ORNL)] is considered a single facility for reporting by the DOE prime contractors. The processing, manufacturing, or "otherwise use" Section 313 chemicals are combined to determine TRI reportability.

Such is the case with lead metal, which is one of two chemicals for which reporting forms were prepared in this pilot study (Task 2). The lead shop at ORNL exceeded the reporting threshold, causing a lead activity at a Y-12 machine shop and lead in waste at ETTP to be reportable. TRI-P3 report preparation time for lead totaled 36.5 hours. The second chemical investigated and reported (chromium) also required nearly a man-week for report preparation and documentation by experienced TRI personnel. The ORR TRI report typically includes about six chemicals, so an estimate of the TRI-P3 incremental reporting burden for ORR would be six weeks for experienced personnel and two/three man-months for first-time ORR preparers.

TRI-P3 is aimed at clearly defined production/manufacturing processes causing a complication for ORR reporting. There are few clearly defined processes involving Section 313 chemicals, yet there is no exemption from reporting in "otherwise use" activities--which may exceed the reporting threshold of 10,000 pounds. Chemical mass balance through a production plant is the ideal TRI-P3 reporting scenario, and mass balance becomes extremely difficult when numerous, unrelated, nonmanufacturing activities on the ORR become reportable (as determined months after closing the reporting year).

TRI EXPANSION RULE, PHASE 3 (TRI-P3)  
OAK RIDGE PILOT PROJECT REPORT

Task 1 – Regulatory Review and Interpretation

TRI reporting at the DOE-ORR encompasses about 34,516 acres of contiguous land and involves operations at three separate facilities: ORNL, the Y-12 Plant, and ETTP (formerly the K-25 Site). Each is a vast industrial complex separated from the others by a distance of 5-10 miles, with little commonality in the work performed. The ORR reports as a single facility, primarily under EO 12856 as there are very few manufacturing/production activities that would be TRI reportable based on SIC code. The Y-12 Plant is the only true "production" site; however, its primary process involves the enrichment of uranium, a non-TRI chemical. The primary processes at ETTP are remedial waste management activities, largely exempt from TRI, and hazardous waste incineration, which has resulted in some inadvertent "manufacture" of TRI-reportable chemicals.

On the ORR, the "otherwise use" criteria (10,000 pounds) usually causes the reporting threshold to be exceeded through aggregation of unrelated chemical usage. The easiest explanation is the rule of "the whole is greater than the parts." EO 12856 requires ORR reporting of these chemicals when the specified threshold is exceeded (even though there is no SIC code limit). So when one site of the ORR reaches a chemical usage close to the threshold, the other parts/sites of the ORR end up reporting (even small, normally exempt measurements) causing the whole itself to go over the threshold.

TRI-P3, being primarily aimed at specific production processes in a "cradle to grave" atmosphere, is not geared to this aggregate situation. The ORR "otherwise use" activities will have to be force-fitted into the rule and onto the form. The following, Task 2, illustrates this point.

## Task 2 – Application of TRI-P3 to a 1997 TRI Chemical

CHEMICAL SELECTION. As proposed in the Statement of Work, the chemicals submitted on an actual TRI report represent an ideal departure point for this pilot study: TRI report preparation is complete (shortening the study period) and the time required for TRI-P3 can be isolated and quantified. Accordingly, lead was selected for reporting in Task 2 of this pilot study.

ORR CHEMICAL USE REPORTING OF LEAD. Lead was reported on the ORR 1997 TRI reports. The lead activity responsible for exceeding the reporting threshold was the melting ("otherwise use") of 236,000 pounds of lead at the ORNL lead melt shop in a recycling/reuse effort. Table 1 shows a summary of the ORNL and other ORR lead activities reported on the Form Rs and how each is being handled in TRI-P3. Two related processes are reportable by ORNL; one Y-12 activity, although unrelated to the ORNL process, is able to be classified as a chemical use process for TRI-P3 reporting. The Y-12 "process" involved a machine shop that drilled holes in a single lead plate for use at the plant. Lead activities at ETTP, also reportable on TRI because of threshold exceedance at ORNL, were related to remedial waste treatment activities, and current state of Massachusetts reporting instructions exempt these activities from Form S reporting. The New Jersey instructions and forms make provision for chemical ingredients in waste, and lead contained in the waste treated at the ETTP incinerator is reportable. Other "out-of-process" remedial waste management activities at ETTP would be extremely difficult to fit into the chemical use reporting process, and it appears that New Jersey would not require reporting beyond the waste management entries on the Form R.

TRI-P3 CHEMICAL USE FORMS FOR LEAD. Enclosed are completed Massachusetts Toxics Use Reduction Act (TURA) Report Form Ss and pertinent sections of the New Jersey Release and Pollution Prevention Report Forms for lead (Appendix A). Since regulatory compliance involves much more time, effort, and documentation than just entering numbers onto a form where appropriate, some of the rationale and thought processes involved in researching and

## Production Units & Processes / Other Form R *LEAD* Activities

Establishment	Production Unit	Related Process	Out-of-Process Activity	Chemical Use Report Status
ORNL	<i>LEAD</i> Melt Shop (236,000 lbs)*			Form S prepared
		Off-site shipment of raw material		Included on Form S
		<i>LEAD</i> in stormwater		25% on Form S
			<i>LEAD</i> in stormwater	Unrelated release; 75% overlooked (Ref. p. 17)**
			Off-site remedial waste shipments	Unrelated releases; overlook (Ref. p. 17)
Y-12 Plant	Machine Shop (~10 lbs used)			Form S prepared
			<i>LEAD</i> in liquid organic waste	Unrelated waste treatment; overlook (Ref. p. 17)
			<i>LEAD</i> in storm & wastewater	Unrelated releases; overlook (Ref. p. 17)
			<i>LEAD</i> in landfill & off-site remedial waste shipments	Unrelated releases; overlook (Ref. p. 17)
ETTP			<i>LEAD</i> in waste at Toxic Substances Control Act Incinerator/Central Neutralization Facility	New Jersey form prepared
			<i>LEAD</i> in TVS remedial waste	Unrelated waste treatment; overlook
			Repackage/store processed waste	Unrelated releases; overlook (Ref. p. 17)
			Off-site remedial waste shipments	Unrelated releases; overlook (Ref. p. 17)
			<i>LEAD</i> in stormwater	Unrelated releases overlook (Ref. p. 17)

\*denotes threshold activity    \*\*State of Massachusetts, TURA Reporting Instructions, page 17.

Table 1. Oak Ridge Reservation Chemical Use Reporting of *LEAD*

completing each form entry are included. The documentation is typical of that prepared and maintained to demonstrate compliance, even where there may be *NO* form entry or perhaps even *NO* report required. DOE burden forms were used to track the TRI-P3 report preparation time, and those forms are also enclosed.

#### SUMMARY REPORT (LEAD) AND GENERAL COMMENTS.

1. The primary reporting establishment, ORNL, obtained the information and prepared the forms and documentation in 20 hours; whether the Massachusetts form or the New Jersey form, it is not entering data onto the form that takes the time, but rather it is data compilation and documentation that is time consuming. Since the Y-12 Plant is part of the single ORR reporting facility, a one-time lead drilling process was reportable under TRI-P3, and it required an additional 12.5 hours. This is 12 hours longer than it took to drill the holes in the lead plate, and it might be representative of the simplest process and the minimum time required for a single TRI-P3 report. ETTP lead activities pertained to waste management processes, for which the reporting forms are not well designed; the Massachusetts guidance to "overlook" unrelated waste treatment processes was applied in this task, while the New Jersey form, where applicable, was completed for the ETTP incineration process in 4 hours.

For our own planning purposes, we conclude that each TRI chemical reported could require an additional week for TRI-P3 reporting by experienced TRI personnel. TRI-P3 reporting of more complex scenarios (including chemicals in waste) by less experienced personnel (or personnel less familiar with the TRI documentation) could require 2 weeks per chemical, and our usual 5-6 chemicals could require up to 3 additional man-months per reporting year.

2. Although we've applied the Massachusetts option to "overlook" waste management activities unrelated to the process/operation/product being reported on (reference Massachusetts 1996 Form S Reporting Package, p.17), that is *NOT* the kind of guidance that will suffice for regulatory compliance. TRI-P3 limits of applicability must be more clearly defined, and if

there are no limits defined, then form preparation and compliance documentation is going to be quite difficult for people with "otherwise use" activities. Direct communication with the state of Massachusetts confirms that (a) their forms are not intended for chemicals in waste (only chemicals used to treat waste), and (b) their reporting instructions have not yet addressed the "otherwise use" chemicals in off-site waste, i.e., TRI-P2, which became effective January 1, 1998. The New Jersey form was easily completed for the incineration process; however, the value of the few completed entries is questionable, and it is not altogether clear whether unrelated out-of-process inventory and waste management activities are to be excluded from the form. If not, the otherwise use process information for a chemical would be quite distorted by bits and pieces of unrelated waste information from other site activities, if ingredient information is even available (our incinerator waste ingredient tracking system is much more detailed than required for most other waste management activities).

3. An objective review of the comments from those preparing the forms clearly indicates that the proposed regulation and forms are targeting certain information that is somewhat irrelevant to the ORNL, Y-12, and ETTP reported processes. This exercise and report did not provide good information on chemical use, nor does it identify an opportunity for reduction of toxic chemicals used in a process. It is felt that existing pollution prevention (P2) programs are more effective at quantifying and targeting problem chemicals. The ORR P2 programs have been active and highly successful, and in general they have not been guided by TRI reports, nor will useful information be obtained from the TRI-P3 report.
4. Data misuse. Form entries such as the byproduct/emissions reduction aspects of TRI-P3, were quite difficult to address and probably "not applicable" for this application, but that could not be concluded. After attempting a report entry, we must then be concerned about what the public will infer from our reporting of 6,503 pounds of lead byproduct (no explanation offered here, because the reporting form doesn't allow for an explanation).

5. Data availability. Site-wide chemical inventory information is generally available via the ORR Hazardous Materials Information System (HMIS); however, it requires a high level of manual attention to be reliable and personnel resources for this type of administrative burden are on the decline. Additionally, HMIS does not provide information on chemicals in waste, and that can be a large part of the inventory at a treatment, storage, and disposal (TSD) facility. TSD waste records are as detailed as required to satisfy the Resource Conservation and Recovery Act (RCRA) regulations.

In this lead reporting project involving "otherwise use" activities, it was discovered from the sites that in performing a routine or one-time support activity, rather than a production activity, there is no strong basis for generating "otherwise use" records, especially where the chemical may have been an ingredient in a previously manufactured article.

6. The New Jersey form provides several exit points, and that is very important when the preparer is struggling with scenarios that do not fit well into the TRI-P3 mold. Those who design the forms must consider not just the ideal reporting scenario, but a broader range of possible scenarios being brought about by TRI expansion, as well as by EO 12856.

### Task 3 – Application of TRI-P3 to a New Chemical

CHEMICAL SELECTION. As proposed, an "otherwise use" chemical in waste was targeted in Task 3, in order to apply the TRI-P2 definition of "otherwise use" and involve the ETTP hazardous waste incinerator along with Y-12 and ORNL. Numerous chemicals are candidates for reporting (there are more than 150 tracked in the waste), but very few are "otherwise used" in sufficient quantity to exceed the reporting threshold. For example, the primary waste ingredient for which the incinerator is permitted, i.e., polychlorinated biphenyls, is being received from off-site facilities, and, if selected, would involve *ONLY* the ETTP site. Recognizing that chemical quantities in off-site waste could change in the future, reporting thresholds could

change in the future, and/or activities at another part of the ORR could trigger the reporting requirement, a chemical (chromium metal) was selected for purposes of this project.

**Note:** the current usage and the numbers appearing on the forms would not have required reporting in the pilot project (reference year, 1997).

ORR "OTHERWISE USE" OF CHROMIUM METAL. Chromium is a very minor constituent in waste handled at the ETPP hazardous waste incinerator, and only about 2 percent of the chromium in waste came from off site in 1997. This breakout of off-site vs. on-site waste is not compiled for any other purposes, so the "otherwise use" amount was not known at the time of chemical selection (even though such data can be calculated from the information in the waste tracking database). At the Y-12 Plant, an electroplating process (reportable activity) involved the "otherwise use" of chromium metal as an ingredient in a plating solution. At ORNL there was chromium as "otherwise use" as an ingredient in welding rods, which lost their article exemption upon use. The pilot reporting exercise was completed at ORNL to be representative of similar activities at the other plant sites, and after the fact, it is very difficult to know whether or not the "otherwise use" was for an exempt activity. ORNL attempted to complete the forms, operating under the assumption that the welding was performed for nonexempt applications. An overview of ORR chemical use reporting for chromium is shown in Table 2.

TRI-P3 CHEMICAL USE FORMS FOR CHROMIUM METAL. Enclosed are completed Massachusetts TURA Report Form Ss and pertinent sections of the New Jersey Release and Pollution Prevention Report Forms for chromium (Appendix B). Supplemental material is provided to explain and document each form entry, along with the time required to compile the information.

## SUMMARY REPORT (CHROMIUM) AND GENERAL COMMENTS:

1. Report preparation time. The reporting of "otherwise use" chemicals depends heavily upon the availability of past records. If personnel time and/or computer resources are not devoted throughout the year, no amount of time by the report preparer will recreate some of the information that is needed solely for chemical use reporting; rough estimation or incomplete reporting are the likely outcomes. For the Y-12 Plant, personal interviews revealed information about the chromium plating activity, although it is an example of an activity that nobody expected to be reportable throughout the year. It is difficult, then, to generate detailed chemical ingredient information after the fact. Estimates were made and the reporting forms prepared in 12.5 hours; an estimated 5 additional hours would have been spent to investigate the use of chromium in activities unrelated to the electroplating process.

In the case of "otherwise use" chemicals in waste, there could be some extremely difficult scenarios involving minor chemical constituents. The ETP hazardous waste incinerator, however, maintains a detailed waste tracking system that was accessed by a system specialist. For a single chemical, there were 6 hours devoted to obtaining the information and preparing the forms, and an estimated 5 additional hours would have been spent to investigate the use of chromium in unrelated site activities. In order to develop the software that would provide chemical use data (as defined by TRI) for all chemical constituents in waste incinerated, a 40-hour development effort is estimated.

With no clear-cut process involving chromium to report on, ORNL addressed the problem of chromium in welding rods (which lose their exempt status upon use) to be representative of the time and effort that would be required at Y-12 and ETP. Information was obtained for estimating usage, and the forms were prepared in 5 hours. In summary, much like the report preparation time for lead, it took a total of 35.5 hours to prepare the chemical use forms for chromium. An additional software development effort of 40 hours is foreseen and an

## Production Units & Processes / Other *CHROMIUM* Activities

Establishment	Production Unit	Related Process	Out-of-Process Activity	Chemical Use Report Status
ETTP	Waste Incinerator	Neutralization facility		Form S prepared
			Soldering and welding	Insufficient use data; refer to ORNL report
			Off-site remedial waste shipments	Unrelated releases; not reported on Form S
			Chromium in stormwater	Unrelated releases; not reported on Form S
			Chromium in other wastes	Unrelated activities; not reported on Form S
Y-12 Plant	Chrome Plating			Form S prepared
			Soldering and welding	Insufficient use data; refer to ORNL report
			Chromium in stormwater	Unrelated releases; not reported on Form S
			Chromium in other wastes	Unrelated activities; not reported on Form S
ORNL			Soldering and welding	Form S prepared with limited data
			Chromium in stormwater	Unrelated releases; not reported on Form S
			Chromium in other wastes	Unrelated activities; not reported on Form S

Table 2. Oak Ridge Reservation Chemical Use Reporting of Chromium

undetermined amount of time and personnel resources could be applied throughout the year to generate "otherwise use" records, which ideally would be available for TRI-P3 compliance.

2. Burden on state agencies. While seeking instructions for completing the Massachusetts TURA Form S, it became evident that their staff was too overloaded in 1997 data collection to be aware of the full effects of TRI-P2 (already in effect) on their data collection in the future. As for the affected industries in Massachusetts, undoubtedly many in September 1998 do not know of the need to include chemical ingredients in off-site waste in threshold determination for calendar year 1998 compliance reporting. This illustrates excessive regulatory and administrative burden. Furthermore, when further automation is relied upon as the solution, it implies more chances for data misuse by the public.
3. As in Task 2, our data collection efforts in Task 3 seemed to be misdirected by TRI-P3 toward activities that are quite insignificant compared to the real pollution issues at the plant sites. On the ORR, this has been brought about by the wide scope of coverage of EO 12856, by broad definition of "facility" as it pertains to more than one reporting establishment, and particularly, by the inclusion of "otherwise use" activities in chemical use reporting. Each regulatory add-on has taken us farther away from the reporting of meaningful data while increasing the reporting burden. The challenge for TRI-P3 is to highlight significant opportunities for source reduction without significantly increasing the administrative burden and causing unintended consequences.

#### Task 4 – Worker Exposure Monitoring

In the ANPR, the information proposed to be collected consists of

- a. Total number of workers at the facility,
- b. Number of workers potentially exposed to the chemical being reported, and
- c. Whether exposure assessment was/is being performed for the chemical.

For the ORNL lead shop, that information is a = 7, b = 7, c = Yes (if the facility is considered only to be the lead shop). An "Overview of the Lead Shop Operation" (Attachment 1) was presented to the TRI-P3 project interviewer by a representative of ORNL Industrial Hygiene. The presentation had previously been prepared and presented to an Occupational Safety and Health Act of 1970 (OSHA) audit team that visited the ORNL lead shop, where an ongoing monitoring program consists of both breathing airspace monitoring and medical (worker blood) sampling. There have been no exceedances of OSHA standards in and around the lead shop, and routine air monitoring in the remainder of the ORNL facility reveals no lead levels approaching the action level of 30 micrograms per cubic meter. Except as special short-term projects on activities may dictate, there is no further facility-wide lead exposure assessment program at the individual worker level.

It is rather apparent that, by operating in full EPA and OSHA compliance, the ORNL lead shop has little or no worker exposure information of value to report, and all facets of the monitoring program document that the "workers potentially exposed" are in fact *NOT* exposed at any regulatorily established limits. Thus, any reported worker exposure information would be available for misuse, and the problem of "facility" definition has not yet been addressed.

The worker exposure information above is based only on the ORNL lead shop facility. Under the EPCRA definition of facility, the ORNL workforce should include the total workers at the facility, even though it has been illustrated and documented that there are no exposures either inside or outside of the lead shop. To let the administrative burden and the numerical totals extend from a totally compliant lead melting process involving seven workers, to the remainder of the ORNL facility and the Y-12 Plant and ETTP is clear evidence of a troublesome regulation with ill-defined limits. The dilemma for the reporting facility is whether to wander off into the compilation and nearly impossible reporting of further extraneous numbers (in the thousands at ORR), or to report just on the production process at hand and perhaps be vulnerable to a nearly impossible interpretation by an auditor or inspector.

The Y-12 Plant has an extensive and comprehensive Ambient Air Monitoring and Worker Protection Program. Specified maintenance jobs are reviewed on a case-by-case basis for any possible need for biological (blood) or air workspace monitoring. The lead activity reported at the Y-12 Plant did not include personnel monitoring simply due to the pre-existing controls established via job hazard analysis.

At ETTP, the site of the Toxic Substances Control Act (TSCA) Incinerator and other hazardous waste management activities, there is an extensive ambient air and personal monitoring program, but not driven by EPCRA TRI-reportable chemicals. The perimeter air monitoring program satisfies state air monitoring requirements and monitors metals in waste at the incinerator. The summary sheet (Attachment 2) illustrates that the ambient air levels are consistently below the level of detection.

Industrial hygiene air monitoring summaries at ETTP, and specifically at the TSCA Incinerator, are shown in Attachments 3 and 4, respectively. To illustrate how little monitoring information the TRI-P3 program would capture, lead monitoring in 1996 constituted approximately 2 percent of the total industrial hygiene effort. To report that as potential exposures, regardless of the number of workers involved, when the actual program documented no exposures in nearly 7,000 samples, would significantly misrepresent an active program in full OSHA compliance. Time spent to isolate information for a TRI-reportable chemical, known locally to be a nonissue, could be more effectively applied toward potential worker health issues that have been identified to the health professionals and their regulating agencies.

## **Attachment 1**

### **ORNL Overview of the Lead Shop Operations**

# OVERVIEW OF THE LEAD SHOP OPERATION

## 1 **Lead Shop Operation (*Building 7005*)**

- . The lead shop supports research activities at ORNL by fabricating lead for shielding against radioactivity.
- . The fabrication of lead is accomplished by the following activities:
  - burning, melting, pouring, cutting, machining, and welding.
- . The equipment utilized for fabrication of lead is as follows:
  - Four furnaces for melting lead
    - . two small with 1000 lb capacity
    - . two large with 5000 lb capacity
  - Dewalt saw for cutting lead
  - Radial arm drill for drilling lead
  - Lathe for machining and milling lead

## 2 **Exposure Assessment**

- . Breathing zone air sampling has been conducted to assess exposures to lead
- . Hygiene facilities have also been monitored for lead dust (surface sampling)
- . Facility surveys and work evaluations are performed periodically.

## 3 **Controls**

- . Engineering controls for worker health & safety
  - Equipment controls:
    - . local exhaust ventilation and safety cut-off valves on the furnaces.
    - . Dewalt saw with local exhaust ventilation
    - . use of coolant during machining/drilling
    - . local exhaust ventilation for welding/cutting
  - Facility controls:
    - . regulated area to prevent unauthorized entry
    - . use of HEPA vacuum to prevent lead in the shower and launch area
    - . positive pressure ventilation for the lunch room
- Periodic ventilation evaluations to ensure adequacy of the system
- Covered storage area for lead to minimize oxidation

## **Controls (cont'd)**

- . Administrative controls are as follows:
  - Lead compliance plan (work guidelines)
  - Safety Work permit
- . Work practices to minimize exposure to lead include:
  - no eating, drinking, smoking, application of cosmetics, etc., in the regulated area
  - washing hands and face, or showering prior to eating
  - showering at the end of the work shift
  - no dry sweeping or blowing with compressed air
  - HEPA vacuuming prior to entry in non-contaminated areas
- . Personal protective equipment utilized at the lead shop is as follows:
  - Company issued clothing and/or disposable clothing
  - Safety glasses
  - Respirators
  - Gloves
  - Steel-toe shoes

### **4 Training**

- . Initial lead training is provided to all employees who work at the lead shop.
- . Refresher training is provided to all employees who have exposures at or above the action level.

### **5 Medical Surveillance Program**

- . ORNL Health Division is responsible for the medical surveillance program.
- . All employees at the lead shop participate in the medical surveillance program.

### **6 Conclusion**

- . ORNL lead shop has recycled 480,000 pounds of lead since 1995 and saved approximately 1.5 million in purchase and disposal costs.
- . All the lead work was performed in accordance with 29 CFR 1910.1025 requirements.

## **Attachment 2**

### **ETTP Ambient Air Monitoring Averages**

**ETTP ANNUAL AMBIENT AIR MONITORING AVERAGES**  
All values expressed as  $\mu\text{g}/\text{m}^3$  All maximums are for an individual analysis period.

1994

Station	Arsenic	Beryllium	Cadmium	Chromium	Lead	Uranium
	(avg)	(max)	(avg)	(max)	(avg)	(max)
K1	0.000118	0.000825	0.000001	0.002243	0.004319	0.008500
K2	0.000101	0.000629	0.000001	0.004676	0.003393	0.005669
K3	0.000159	0.001028	0.000001	0.000925	0.003638	0.006860
K4	0.000196	0.000917	0.000001	0.000964	0.003671	0.006440
K5	0.000276	0.001301	0.000001	0.000517	0.004195	0.012970
K6	0.000185	0.000384	0.000001	0.000266	0.000001	0.000255
K7	*	*	*	*	*	*
Published Annual Avg.	0.000173		0.000001	0.000974	0.003203	0.000143

Measurement period: Weekly continuous samples.

Non-routine operations: Major logging operations around the perimeter of the ETTP Site.

1995\*\*

Station	Arsenic	Beryllium	Cadmium	Chromium	Lead	Uranium
	(avg)	(max)	(avg)	(max)	(avg)	(max)
K1	0.000234	0.001714	0.000001	0.000527	0.001543	0.003110
K2	0.000077	0.000309	0.000001	0.000586	0.001422	0.003830
K3	0.000227	0.000624	0.000001	0.000547	0.001295	0.003110
K4	0.000086	0.000429	0.000001	0.000946	0.001234	0.004330
K5	0.001638	0.006837	0.000001	0.000682	0.001711	0.013990
K6	0.000007	0.000101	0.000001	0.000080	0.000254	0.004390
K7	0.000040	0.000013	0.000001	0.001306	0.000001	0.000001
Published Annual Avg.	0.000304		0.000601	0.001491	0.001066	0.000059

Measurement period: Monthly composite of weekly continuous samples.

Non-routine operations: Major logging and major demolition activities in and around the perimeter of the ETTP Site.

1996\*\*\*

Station	Arsenic	Beryllium	Cadmium	Chromium	Lead	Uranium
	(avg)	(max)	(avg)	(max)	(avg)	(max)
K1 (PAM35)	0.000420	0.000683	0.000024	0.000066	0.002863	0.003565
K2	*	*	*	*	*	*
K3 (PAM42)	*	*	*	*	*	*
K4	*	*	*	*	*	*
K5	*	*	*	*	*	*
K6	0.000528	0.000800	0.000025	0.000072	0.003006	0.004442
K7	*	*	*	*	*	*
Published Annual Avg.	0.000474		0.000025	0.001082	0.002935	0.000146

Measurement period: Monthly composite of weekly continuous samples.

Non-routine operations: None.

\* No data available. Site not operational.

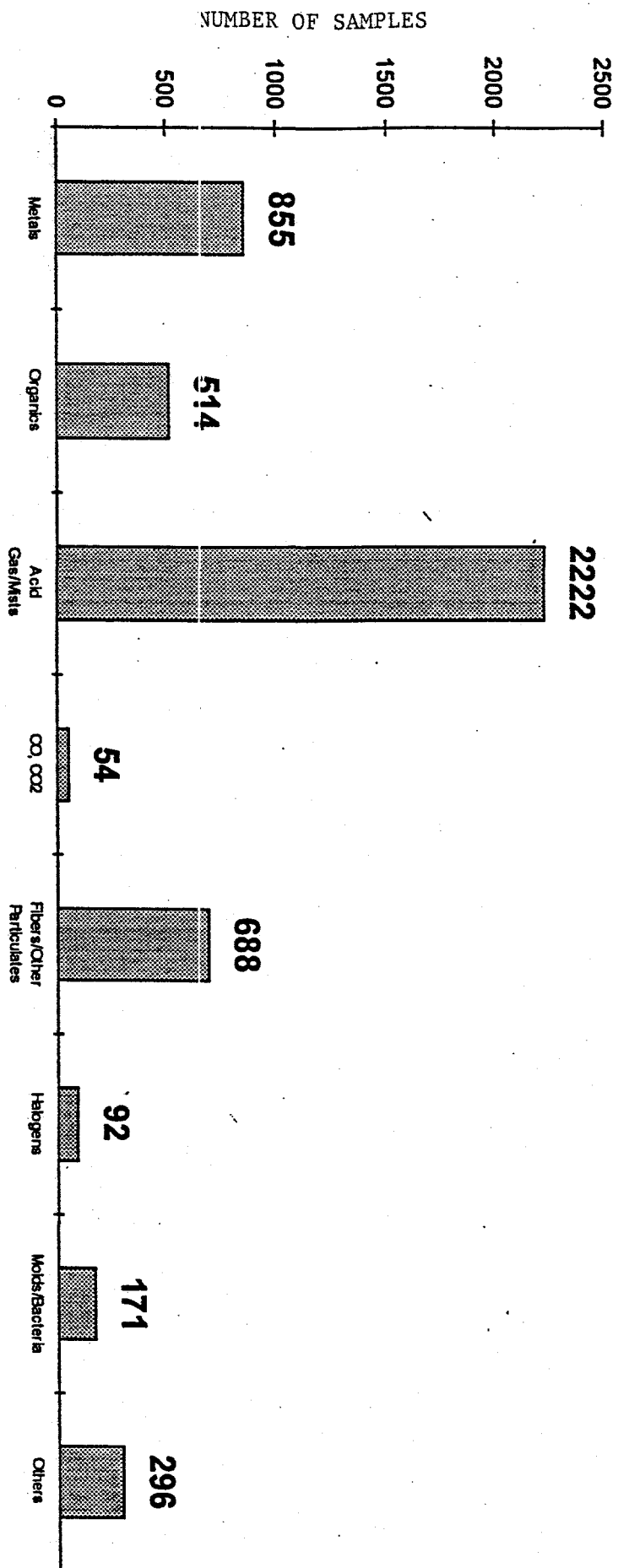
\*\* Initiated monthly compositing of weekly continuous sampling for metals analyses.

\*\*\* Discontinued sites due to redundant sampling. Used split samples from reservation monitors.

## **Attachment 3**

### **ETTP Industrial Hygiene Air Monitoring Summary**

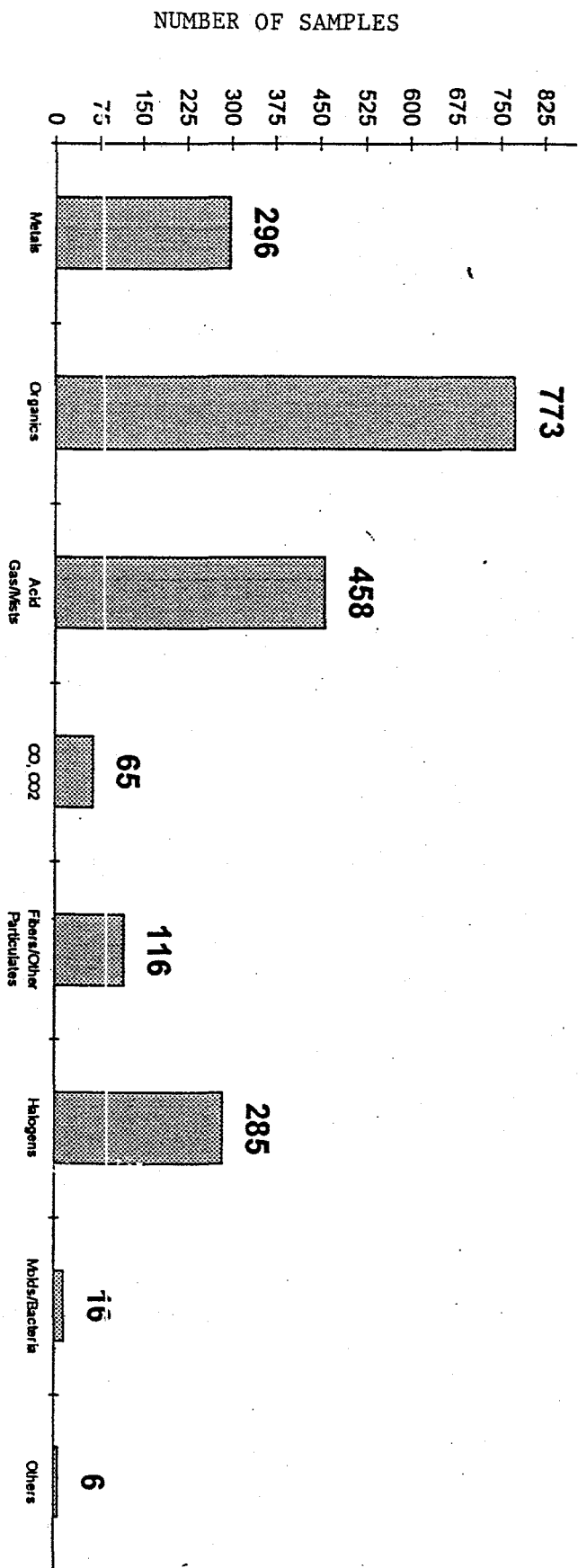
# East Tennessee Technology Park FY 1996 Industrial Hygiene Air Monitoring Summary



## **Attachment 4**

### **ETTP TSCA/Waste Management Air Monitoring Summary**

# East Tennessee Technology Park TSCA/Waste Management Air Monitoring Summary 1991-1996



**INTENTIONALLY BLANK**

**APPENDIX A**

**Data Package for Lead**

Facility Name:	ORNL	Facility ID#	
Chemical:	LEAD	Reporting Year	1997

Massachusetts Department of Environmental Protection

**TURA REPORT - FORM S**

Toxics Use Reduction Act - Chemical Usage Facility-Wide &amp; by Production Units

Section 1: Facility-Wide Usage of Listed Chemical

1.1 007439921 Lead  
 Chemical Abstract Service (CAS) Number (if applicable) Chemical Identification (from Form R)

1.2 Facility-Wide Usage of Chemical Identified in 1.1 above. Enter total amount (in POUNDS) for each applicable category.  
 NOTE: Byproduct (Item 1.2d) generally means all wastes containing the listed chemical before the waste is treated or recycled. Read the instructions carefully, however, before completing this section.

1.2a Manufactured: \_\_\_\_\_

1.2d Generated as Byproduct: 6503

1.2b Processed: \_\_\_\_\_

1.2e Shipped in or as Product: \_\_\_\_\_

1.2c Otherwise Used: 2360006

1.3 OPTIONAL QUESTION. When the amounts reported in 1.2a, 1.2b, and 1.2c are added together, the sum will -- in many cases -- equal the sum of 1.2d and 1.2e. In other words, the left and right columns will often form a "materials balance." If the two columns are not in approximate balance, you may use this block to explain why. Mark all the reasons that apply, or indicate the number of pounds in the appropriate block below. (i.e.: 4,000 Chemical was held in inventory).

229497 Chemical was recycled on site. \_\_\_\_\_ Chemical was consumed or transformed.

\_\_\_\_\_ Chemical was held in inventory. \_\_\_\_\_ Chemical is a compound.

\_\_\_\_\_ Other (explain): \_\_\_\_\_

1.4 OPTIONAL QUESTION: Did anything non-routine occur at your facility during the reporting year which affected the data reported?

\_\_\_\_\_ YES X NO If YES, you may use this space to comment:

Section 2: Chemicals Used in Waste Treatment Units

2.1 Is this chemical used to treat waste or control pollution? \_\_\_\_\_ YES X NO

If YES, enter the quantity of chemical code for the amount used to treat waste or control pollution:     

OPTIONAL -- You may enter the amount: \_\_\_\_\_

Section 3: TURA Report on Production Unit#: 01 (Enter # from the Form S Cover Sheet.)3.1 Base Year: 1995

3.4 Byproduct Reduction Index: \_\_\_\_\_

3.2 Quantity of Chemical Code: C

3.5 Emissions Reduction Index: \_\_\_\_\_

3.3 Toxics Use Reduction Techniques Code:

6	1								
---	---	--	--	--	--	--	--	--	--

If there has been a change from one reporting year to the current year in a (1) base year, and/or (2) estimating methods (that significantly alter previously-reported data) for this PRODUCTION UNIT REPORT, describe the change:

FORM S COVER SHEET (continued)

Section 4: Facility-Wide Listing of Production Units

A PRODUCTION UNIT is best thought of as the combination of the process (or activities) used to produce a product or service and the product or service. In this block, please identify the PRODUCTION UNITS at the facility, then use the production unit number to report on chemical usage in the attached Form S. If there is a substantial change in a PRODUCTION UNIT from one reporting year to the next, the PRODUCTION UNIT must be given a new, unique number.

Production Unit #:

This Production Unit (Process/Product Combination) is: The Same As Reported Last Year 61 New

Describe the Process: The lead shop melts and pours lead bricks and other styles. Recycle is the process.

Describe the Product: lead bricks and styles for radiological shielding

Enter the four-digit SIC Code(s) that best describe(s) the product:

\_\_\_\_\_

Describe the Unit of Product:

(Please specify if the Unit of Product has been changed since the previous reporting year.)

PRODUCTION PROCESS STEP INFORMATION FOR THIS PRODUCTION UNIT

Enter the production process code(s) to identify the process step(s) that involves a TUR-reportable chemical(s) as an input, output or throughput. (See the reporting guidance document for the list of production process codes and instructions on when a given code needs to be listed.)

1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_ 4. \_\_\_\_\_

5. \_\_\_\_\_ 6. \_\_\_\_\_ 7. \_\_\_\_\_ 8. \_\_\_\_\_

List below, the TURA-reportable chemicals associated with the production unit. If a chemical is associated with ALL the process steps identified above, check the ALL block. If the chemical is associated with some but not all of the process steps, put the relevant code(s) (from above) next to the chemical

Chemical(s)  
Lead metal

Chemical Name

007439921

CAS#

Chemical Name

CAS#

Chemical Name

CAS#

Production Process

ALL \_\_\_\_\_

\_\_\_\_\_

ALL \_\_\_\_\_

\_\_\_\_\_

ALL \_\_\_\_\_

\_\_\_\_\_

## **TURA Report - Form S**

### **1.1 CAS No.**

007439921

### **Chemical Identification**

Lead

#### **1.2a**

0

#### **1.2b**

0

#### **1.2c**

Only looked at the one process at ORNL. The Lead Shop takes lead items on Site to melt and pour lead bricks and other styles. Melting and pouring the lead IS the Process. The newly poured bricks and other styles are used on Site for radiological shielding. The Lead Shop melted 236000 lbs of lead in CY 97.

#### **1.2d**

6500 lbs of slag was generated from melting 236000 lbs of lead at the Lead Shop in CY 97

Lead to air from melting at the Lead Shop

Per Air Pollutant (AP) 42 Emission Factors for Secondary Lead Processing for Refining/Casting indicates that 0.01 pounds/ton + 0.0004 pounds/ton (fugitive) = 0.011 pounds/ton is the factor to be used for lead emissions. The furnace at the Lead Shop vents to one of several stacks.

Air emissions  $236000 \text{ lb} * 1 \text{ ton}/2000 \text{ lb} * 0.011 \text{ lb/ton} = 1.3 \text{ lb}$  for lead melted in CY 97

The Lead Shop is located inside a building with no patent drains to the Stormwater System. However, a portion of the lead that is slated for melting at the Lead Shop is stored outside. Assumed that 25% of the lead to White Oak Dam is attributed to runoff from lead that is destined for the Lead Shop.

## Lead in Stormwater

Received WOD information (flow across WOD) from Melinda Salmons. Talked with Wes Goddard on 4-16-97 and he indicated that ORNL used 3-5 MGD supply water which is exempt from reporting, any additional water contribution to WOD would be a result of groundwater and stormwater. Made the following assumptions: Added the twelve sampling events for lead at WOD for CY '96 and averaged (0.0017 mg/l); Because ORNL uses 3-5 MGD supply water calculations subtracted out 4 MGD from total flow at WOD. Due to issuance of a new NPDES Permit ORNL is no longer required to monitor for lead. Operations have not changed over the last calendar year that should affect lead concentrations in storm water. Used '96 lead numbers and the '97 measured flow at WOD. Based upon discussions with Melinda Salmons, Charlie Valentine, and Wes Goddard amount of lead in storm water is a function of storm events.

$$(4 \text{ MGD}) * (3.7854 \text{ l/gallon}) * (365 \text{ days/yr}) = 5526684000 \text{ liters/yr}$$

CY 97

$$(13957.50 \text{ E6 l}) - (5526684000 \text{ l}) = 8430816000 \text{ liters}$$

$$(8430816000 \text{ l}) * (0.0017 \text{ mg/l}) * (1 \text{ g}/1000 \text{ mg}) = 1.46 \text{ E4 g}$$

$$(1.46 \text{ E4 g}) * (2.205 \text{ E-3 lb/g}) = 30.87 \text{ lbs}$$

Assumed that only 25% is attributable to the Lead Shop operations

$$(30.87 \text{ lbs})(0.25) = 8 \text{ lbs}$$

Assumed that ~ 25% of the 8 lbs is due to lead melted in CY 97 or 2 lbs

$$6500 \text{ lbs} + 1 \text{ lb} + 2 \text{ lbs} = 6503 \text{ lbs}$$

### 1.3 Optional Question

229497 lbs of lead was recycled on site. Our process IS recycling or reusing lead by melting into needed configurations for radiological shielding on site.

### 1.4 Did anything non-routine occur...

No

### 2.1 Is the chemical used to treat waste or control pollution

No

## Section 3 Production Unit #01

### 3.1 Base Year

Exceeded a reporting threshold for lead in CY 95 due to resumed Lead Shop operations. Lead had been reported previously. The Lead Shop only resumed operations on 10-24-95. The lead melted, byproducts, and emissions are very low due to the limited operations in CY 95.

### 3.2 Quantity of Chemical Code

C (>10000 lbs) Melted and poured 236000 lbs of lead at the Lead Shop.

### 3.4 Byproduct Reduction Index

$$BRI = 100 * A-B/A$$

A = Byproduct quantity in the base year/# of units of product produced in the base year

B = Byproduct quantity in the reporting year/# of units of product produced in the reporting year

$$BRI =$$

$$(100)(5680 \text{ lbs of slag}/44150 \text{ lbs of lead melted} - 6500 \text{ lbs of slag}/236000 \text{ lbs melted})/5680$$

$$BRI = 1.8E-3$$

Melted 44150 lbs of lead at the Lead Shop in CY 95 (see 3.1)

Did not really reduce slag generated between CY 95 and CY 97 because melted more lead. Our reduction was melting and pouring the lead into usable styles for shielding rather than disposing of the lead as a hazardous or mixed waste. Could consider that our reduction was the 236000 lbs melted - 6500 lbs slag - 1 lb to air = 229499 lbs of lead reused. Avoided disposal or the cost associated with finding a user for the lead and shipping costs. Do not believe that this fits well with the question or intention of this section on the form.

### 3.5 Emission Reduction Index

$$ERI = 100 * A-B/A$$

A = Emission quantity in the base year/# of units of product produced in the base year

B = Emission quantity in the reporting year/# of units of product produced in the reporting year

The limit of detection for analytical data for CY 95 versus CY 97 would account for reductions in emissions. Did not really reduce emissions between CY 95 and CY 97 because melted more lead. Our reduction was melting and pouring the lead into usable styles for shielding rather than disposing of the lead as a hazardous or mixed waste. Could consider that our reduction was the 236000 lbs melted - 6500 lbs slag - 1 lb to air = 229499 lbs of lead reused. Avoided disposal or the cost associated with finding a user for the lead and shipping costs. Do not believe that this fits well with the question or intention of this section on the form.

## **TURA Report Cover Sheet**

### **Section 4**

#### **Production Unit**

#01

#### **Process Description:**

Only looked at the one process at ORNL. The Lead Shop takes lead items on Site to melt and pour lead bricks and other styles. Melting and pouring the lead IS the Process. The newly poured bricks and other styles are used on Site for radiological shielding. The Lead Shop melted 236000 lbs of lead in CY 97.

#### **Product Description:**

The Lead Shop takes lead items on Site to melt and pour lead bricks and other styles. Melting and pouring the lead IS the Process. The newly poured bricks and other styles are used on Site for radiological shielding.

#### **Unit of Product:**

Pounds of lead melted in a calender year

#### **Production Process Step Information:**

None identified. Appendix H did not have codes that accurately described our process. The lead at the Lead Shop is melted NOT smelted. The lead is poured to form bricks or other styles. The configuration of the lead is changed for radiological shielding purposes.

#### **Chemical:**

Lead Metal  
CAS No. 007439921

## RELEASE &amp; POLLUTION PREVENTION REPORT FOR 1995

**SECTION B. FACILITY-LEVEL SUBSTANCE-SPECIFIC INFORMATION**

Submit one complete Section B for each reportable substance (listed in Appendices B and C of the instructions) manufactured, processed, or otherwise used in excess of 10,000 pounds in 1995.

ORNL		1.1 CAS No. (Category No.)	007439921
		1.2 RTK Substance No.	
1.3	Substance Name (Category Name)		
LEAD METAL			
2	ACTIVITIES AND USES OF THE SUBSTANCE AT THE FACILITY (Check all that apply.)		
2.1	Manufacture the substance:	<input type="checkbox"/> Produce <input type="checkbox"/> Import	If produce or import: <input type="checkbox"/> For on-site use/processing <input type="checkbox"/> As a byproduct
			<input type="checkbox"/> For sale/distribution <input type="checkbox"/> As an impurity
2.2	Process the substance:	<input type="checkbox"/> As a reactant <input type="checkbox"/> As a formulation component	<input type="checkbox"/> As an article component <input type="checkbox"/> Repackaging
2.3	Otherwise use the substance:	<input type="checkbox"/> As a chemical processing aid <input type="checkbox"/> As a manufacturing aid	<input type="checkbox"/> Ancillary or other use
3.1	Principal Method of Storage:		
3.2	Frequency of Transfer from Storage: _____ times per _____		
3.3	Methods of Transfer:		

**INVENTORY AND THROUGHPUT INFORMATION**

## Inventory:

	Quantity (pounds)	Basis of Estimate (circle one)
4. Maximum Daily Inventory of the Substance		M C E O

## Inputs

	Quantity	Basis of Estimate
5. Starting Inventory of Substance	729625	M C E O
5.1 Quantity of Starting Inventory that is Nonproduct Output	20108	M C E O
6. Quantity Produced on Site	0	M C E O
7. Quantity Brought on Site	0	M C E O
7.1 Quantity of No. 7. (above) that is Brought on Site as Recycled Substance	0	M C E O
8. Quantity Recycled Out-of-Process on Site and Used on Site	229499	M C E O

## Outputs

	Quantity (pounds)	Basis of Estimate (circle one)
9. Quantity Consumed on Site (chemically reacted in process)	0	M C E O
10. Quantity Shipped off Site as (or in) Product	0	M C E O
11. Ending Inventory	729616	M C E O
11.1 Quantity of Ending Inventory that is Nonproduct Output	20087	M C E O
12. Total Nonproduct Output (NPO) Generated	6509	(M) T

## Other:

	Quantity (pounds)	Basis of Estimate (circle one)
13. Quantity Destroyed through On-Site Treatment		M C E O
14. Quantity Destroyed through On-Site Energy Recovery		M C E O

25. Have any reductions in the use of the substance or generation of the substance as nonproduct output (NPO) occurred during 1995 due to discontinuance of operations?

☐ Yes ☐ No If "Yes," fill in below:

Quantity of Substance Reduced (pounds) (1994 to 1995)	Basis of Estimate
Quantity of substance reduced (1994 to 1995) due to discontinuance of operations, including operations transferred to or undertaken by another facility	M C E O

### POLLUTION PREVENTION ACTIVITIES

For the purpose of this Section and Sections C and D of this Report, pollution prevention means: the reduction or elimination of either the use of the substance or the generation of the substance as nonproduct output, prior to treatment, storage, out-of-process recycling or disposal. Pollution prevention is not any type of treatment, out-of-process recycling, incineration, or the transfer of releases to different media.

26. Has any pollution prevention method been employed to reduce the quantity of this substance during <sup>1994</sup>1993 relative to 1994 <sup>1995</sup>1995 levels? ☐ Yes ☐ No If "Yes," <sup>Provide quantity of substance reduced (lbs)</sup> fill in the table below: <sup>1995 to 1996</sup>

POLLUTION PREVENTION METHODOLOGY (Complete all appropriate sections)		Quantity of Substance Reduced (pounds) (1994 to 1995)	Basis of Estimate
25.1	Material-Related Change (changes in the amount of substance used due to substitution of other non-listed substance)		M C E O
Name and Quantity of Substrate Substance			
	<u>CAS NUMBER</u>	<u>SUBSTANCE</u>	<u>QUANTITY (lbs.)</u>
a)			
b)			
c)			

\* Facilities in SIC codes 26, 28, 30, 33 and 34 STOP HERE. Do not finish this page! Go on to Sections C and D. Facilities in all other SIC codes complete this page.

	Quantity of Substance Reduced (pounds) (1994 to 1995)	Basis of Estimate
26.2 Reformulation or Redesign of Product (resulting in the reduction of substance generated)		M C E O
26.3 Process or Procedure Modifications (using existing equipment to reduce substance generated)		M C E O
26.4 Equipment or Technology Modifications (using new equipment or technology to reduce substance generated)		M C E O
26.5 Improved Operations (due to housekeeping, training, material handling or inventory control to reduce substance generated)		M C E O
26.5 Miscellaneous (Describe: _____)		M C E O

27. Does your facility anticipate reducing the use or generation of the substance as nonproduct output in the future due to pollution prevention? ☐ Yes ☐ No If "Yes," indicate your projections in the table below:

PROJECTION	YEAR	
	1997	2000
Reduction in the quantity of the substance used or generated as NPO per year due to pollution prevention assuming production is constant (pounds)		

## RELEASE &amp; POLLUTION PREVENTION REPORT FOR 1995

\*\*\* ONLY FACILITIES IN SIC CODES 26, 28, 30, 33 OR 34 COMPLETE THIS SECTION. \*\*\*

### SECTION C. FACILITY-LEVEL SUBSTANCE-SPECIFIC POLLUTION PREVENTION PROGRESS

Submit one complete Section C for each reportable substance (listed in Appendices B and C of the instructions) manufactured, processed or otherwise used in excess of 10,000 pounds in 1995. Do not complete this Section for substances noted with an asterisk (\*) or a check mark (✓) in Appendices B and C.

FACILITY LOCATION INFORMATION	1.1 CAS No. (Category No.) <u>00-4399-21</u>
	1.2 Substance Name (Category Name) <u>Lead</u>

2.1 Are the facility-level, substance-specific goals stated in Section B of your Pollution Prevention Plan Summary of 1993 based on constant production?

☐ Yes ☐ No

2.2 If you answered "NO" to Question 2.1, restate your facility-level, substance-specific Use and NPO goals for this substance as if production were constant (see instructions). If you answered "YES," or if you already restated your goals under this question last year, leave this question blank.

Use	NPO
b.	b.
%	%

3. Production Ratio or Activity Index is Current Form R, Section 8.04

4. Percent Reduction 2.33

Use	NPO
%	%

5. Check here if you classified any outputs for this substance as co-product on Section B, Question 2 of your 1993 Pollution Prevention Plan Summary. If you check this box, call the Office of Pollution Prevention at (800) 777-0518 for special instructions on how to report the effects of co-product sales on your pollution prevention reduction numbers.

☐

6. Note the identification numbers of any production processes that your facility discontinued or sent off site in 1995. These numbers should match those identified in your Pollution Prevention Plan and Section C of your Pollution Prevention Plan Summary. If any of the listed processes involved more than one reportable substance, identify the process ID only once on a single Section C. If no production processes were discontinued or sent off site in 1995, leave this blank.

7. **CERTIFICATION OF OWNER OR OPERATOR** (Required only on one Section C.) — I certify under penalty of law that the information submitted in Sections C and D of this report is true, accurate and complete to the best of my knowledge.

Signature \_\_\_\_\_ Date \_\_\_\_\_ Phone No. ( ) \_\_\_\_\_

## New Jersey Form S

### 5.0 Starting Inventory of Substance on Site:

Only looked at the one process at ORNL. The Lead Shop takes lead items on Site to melt and pour lead bricks and other styles. Melting and pouring the lead IS the Process. The newly poured bricks and other styles are used on Site. The Lead Shop melted and poured 236000 lbs of lead for radiological shielding needs on Site. For purposes of this report only accounted for lead that is slated to go to the Lead Shop and the lead melted in CY 97 at the Lead Shop. Did not inventory the lead that is part of a facility that is (or was) used for shielding. Did not consider the lead that was brought on Site as an article for shielding and was used for shielding. The lead that is designated to go to the Lead Shop consists of nonradiological lead items and surface radiologically contaminated lead items. To melt radiologically contaminated lead at the Lead Shop will require a modification to the existing air permit. Until the permit is modified no radiologically contaminated lead will be melted at the Lead Shop. Starting inventory consists of 267575 lbs nonradiologically contaminated lead (per Dale Knight) + 215000 lbs of radiologically contaminated lead (per Russ Carvin) + 11050 lbs of radiologically contaminated lead (per Dale Knight) + 236000 lbs of lead melted in Calendar Year 1997 = **729625 lbs**

### 5.1 Starting Inventory that is NPO

The only amount of starting inventory that is Nonproduct Output is the slag generated from lead melting at the Lead Shop. In CY 97 the Lead Shop melted 236000 lbs of lead and generated 6500 lbs of slag. Assumed that a proportional amount of slag will be generated from the lead slated for melting.

$$236000 \text{ lbs Pb} / 1 \text{ lb Pb} = 6500 \text{ lbs slag} / X \text{ lbs slag}$$

$$1 \text{ lb Pb} = 2.75424\text{E-}2 \text{ lbs slag}$$

Total amount of lead in inventory (see 5.0) is 729625 lbs

$(729625 \text{ lbs Pb})(2.75424\text{E-}2 \text{ lbs slag/lb Pb}) = 20096$  (this number includes the 6500 lbs of slag generated at the Lead Shop in CY 97)

Lead to air from melting at the Lead Shop

Per Air Pollutant (AP) 42 Emission Factors for Secondary Lead Processing for Refining/Casting indicates that 0.01 pounds/ton + 0.0004 pounds/ton (fugitive) = 0.011 pounds/ton is the factor to be used for lead emissions. The furnace at the Lead Shop vents to one of several stacks.

Air emissions  $236000 \text{ lb} * 1 \text{ ton}/2000 \text{ lb} * 0.011 \text{ lb/ton} = 1.3 \text{ lb}$  for lead melted in CY 97

Air emissions  $(729625 \text{ lbs})(1 \text{ ton}/2000 \text{ lb})(0.011 \text{ lb/ton}) = 4 \text{ lbs}$  if all lead was melted on Site in a CY

The Lead Shop is located inside a building with no patent drains to the Stormwater System. However, a portion of the lead that is slated for melting at the Lead Shop is stored outside. Assumed that 25% of the lead to White Oak Dam is attributed to runoff from lead that is destined for the Lead Shop.

Lead to Stormwater

Received WOD information (flow across WOD) from Melinda Salmons. Talked with Wes Goddard on 4-16-97 and he indicated that ORNL used 3-5 MGD supply water which is exempt from reporting any additional water contribution to WOD would be a result of groundwater and stormwater. Made the following assumptions: Added the twelve sampling events for lead at WOD for CY '96 and averaged (0.0017 mg/l); Because ORNL uses 3-5 MGD supply water

calculations subtracted out 4 MGD from total flow at WOD. Due to issuance of a new NPDES Permit ORNL is no longer required to monitor for lead. Operations have not changed over the last calendar year that should affect lead concentrations in storm water. Used '96 lead numbers and the '97 measured flow at WOD. Based upon discussions with Melinda Salmons, Charlie Valentine, and Wes Goddard amount of lead in storm water is a function of storm events.

$$(4 \text{ MGD}) * (3.7854 \text{ l/gallon}) * (365 \text{ days/yr}) = 5526684000 \text{ liters/yr}$$

CY 97

$$(13957.50\text{E}6 \text{ l}) - (5526684000 \text{ l}) = 8430816000 \text{ liters}$$

$$(8430816000 \text{ l}) * (0.0017 \text{ mg/l}) * (1 \text{ g}/1000 \text{ mg}) = 1.46\text{E}4 \text{ g}$$

$$(1.46\text{E}4 \text{ g}) * (2.205\text{E}-3 \text{ lb/g}) = 30.87 \text{ lbs}$$

Assumed that only 25% is attributable to the Lead Shop operations

$$(30.87 \text{ lbs})(0.25) = 8 \text{ lbs}$$

~ 25% of the 8 lbs is due to lead melted in CY 97 or 2 lbs

Total Starting Inventory that is NPO

$$20096 \text{ lbs} + 4 \text{ lbs} + 8 \text{ lbs} = 20108 \text{ lbs}$$

## **6.0 Quantity Produced on Site**

No lead was produced on Site

## **7.0 Quantity brought on Site**

No lead was brought on Site for melting at the Lead Shop. Only considered the lead that is melted at the Lead Shop. Lead was brought on Site (article) and used as shielding (article) on Site.

## **7.1 Quantity of No. 7 that was brought on Site as Recycled Substance**

No lead was brought on Site for melting at the Lead Shop.

## **8.0 Quantity recycled Out-of-Process on Site and used on Site**

Our Process IS recycling or reusing lead by melting into needed configurations for radiological shielding on Site. Although our recycling is the Process, tried to fit our activities into the form provided. The amount of melted lead in CY 97 that was used on Site was:

236000 lbs melted pb - 6500 lbs slag - 1 lb to air = **229499 lbs of Pb**

## **9.0 Quantity Consumed on Site**

No lead was consumed on Site

## **10.0 Quantity Shipped off Site as Product**

No lead melted on Site was shipped off Site

## **11.0 Ending Inventory**

Because the 6500 lbs of slag generated in CY 97 remains on Site the ending inventory  
729625 lbs of lead on Site (see 5.0) - 1 lb to air (see 5.1) - 8 lbs to stormwater runoff (see 5.1) =  
**729616 lbs**

### **11.1 Quantity of Ending Inventory that is NPO**

Because the 6500 lbs of slag generated in CY 97 remains on Site the ending inventory of NPO is  
20096 lbs (see 5.1) - 1 lb to air (see 5.1) - 8 lbs to stormwater runoff (see 5.1) = **20087 lbs**

## **12.0 Total NPO Generated**

6500 lbs of slag was generated from melting at the Lead Shop in CY 97

6500 lbs + 1 lb to air (see 5.1) + 8 lbs to stormwater runoff (see 5.1) = **6509 lbs**

## **26.0 Has any Pollution Prevention method been employed ...**

Our recycling of lead IS the Process (see 5.0). This section could not be completed because it does not consider processes that are recycling.

## **27.0 Does your facility anticipate reducing NPO**

No. Melting of lead produces slag as a waste product.

## **Section C**

### **1.1 CAS No.**

007439921

### **1.2 Substance Name**

Lead

## **3. Production Ratio**

Based upon conversations with Dale Knight Production Ratio should be based on lead bricks and other styles produced. This is calculated in pounds by subtracting the slag generated from lead melted. '96 101700 pounds - 3320 pounds = 98380 pounds and '97 236000 pounds - 6500 pounds = 229500 pounds. Production Ratio  $229500/98380 = 2.33$

#### 4. Percent Reduction

Did not reduce slag generated between CY 96 and CY 97 because melted more lead. Our reduction was melting and pouring the lead into usable styles for shielding rather than disposing of the lead as a hazardous or mixed waste. Could consider that our percent reduction was the 236000 lbs melted - 6500 lbs slag - 1 lb to air = 229499 lbs of lead reused. Avoided disposal or the cost associated with finding a user for the lead and shipping costs. Do not believe that this fits well with the question or intention of this section on the form.

NOTE: ORNL's functional titles for the above mentioned individuals are as follows:

Russ Carvin - Supervisor, Solid Waste Management Operations Group

Wes Goddard - Engineer, Clean Water Act Group

Dale Knight - Supervisor of Fabrication, Plant and Equipment Group

Melinda Salmons - Data Analyst, Environmental Compliance and Documentation  
Group

Joe Wolfe - Group Leader, Clean Air Act Group

TRI - Phase III  
*DOE Chemical Use Reporting Pilot and  
Burden & Benefit Evaluation*

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**Instructions:** For each chemical you prepare a 1997 Form R for:

1) Please complete the attached N.J. form for just the Inputs, Outputs and Pollution Prevention Activities and Progress sections identified below.

**Inputs (Section B, 5-8)**

- Starting inventory of a substance (5.)
- Quantity of starting inventory that is Nonproduct Output\* (NPO)(5.1)
- Quantity produced on site (6.)
- Quantity brought on site (7.)
- Quantity brought on site as a recycled substance (7.1)
- Quantity recycled out-of-process on site and used on site (8.)

**Outputs (Section B, 9-12)**

- Quantity consumed on site (chemically reacted in process) (9.)
- Quantity shipped off site as (or in) product (10.)
- Ending inventory (11.)
- Quantity of ending inventory that is Nonproduct Output\* (NPO)(11.1)
- Total Nonproduct Output\* (NPO) generated (12.)

**Pollution Prevention Activities (Section B, 26.-26.6)**

- Has any pollution prevention method been employed to reduce the quantity of this substance during this reporting year relative to last year's levels? If yes complete items 26.1-26.6 for years 1995 to 1996 (26.)
- Material-Related change and substitute substance (complete all appropriate sections) (26.1)
- Reformulation or redesign of product (26.2)
- Process or procedure modifications (26.3)
- Equipment or technology modifications (26.4)
- Improved operations (26.5)
- Miscellaneous (26.6)

**Facility-Level Substance-Specific Pollution Prevention Progress (Section C, 4.)**

- Percent reduction (4.)

2) While completing the form, please complete the burden evaluation form to indicate the number of increased labor hours for each reporting element with regard to managerial, technical and clerical aspects of TRI reporting for the first and subsequent years.

3) Please complete the survey on the benefits evaluation form for evaluating the usefulness of toxic chemical use reporting.

---

All quantities are reported in pounds.

\* Nonproduct Output (NPO) is the quantity of the reported substance that was generated prior to storage, out-of-process recycling, treatment, control or disposal, and that was not intended for use as a product. This includes environmental releases and off-site transfers for energy recovery or recycling, and as (or in) waste for treatment and/or disposal.)

## Burden Evaluation Form

5.0

Requested additional information from the Lead Shop (Dale Knight) regarding amount of lead in inventory. Inventory was conducted and information was provided - 1 hour Technical. Requested information from Waste Management (Russ Carvin) regarding amount of contaminated lead in inventory slated for recycle. Inventory was conducted and information was provided - 2 hours Technical. Joe Wolfe provided information regarding the status of the existing air permit at the Lead Shop - 1 hour Technical. My time requesting and compiling information, completing forms, and gathering backup information for audit purposes - 2 hours Technical. Typing forms and backup documentation - 0.5 hours Clerical. Management review and committee meetings - 0.5 hours Managerial.

### Note

Only looked at the Lead Shop operations. Lead is used as shielding in many buildings throughout the Laboratory. The shielding was not included in the inventory. The instructions need to be clearer. Do the 313 exemptions apply?

5.1

The information from Question 5.0 was used along with calculations from the 313 Report. Calculated the starting inventory that is NPO. My time compiling information, completing forms, and gathering backup information for audit purposes - 0.5 hours Technical. Typing forms and backup documentation - 0.5 hours Clerical. Management review and committee meetings - 0.5 hours Managerial.

6.0

Process knowledge acquired while completing the 313 Report. No lead produced on site. My time compiling information, completing forms, and gathering backup information for audit purposes - 0.5 hours Technical. Typing forms and backup documentation - 0.5 hours Clerical. Management review and committee meetings - 0.5 hours Managerial.

7.0

No lead was brought on site for melting at the Lead Shop. Lead brought on site was used for shielding (article). Do the 313 exemptions apply? Looked at the information gathered for 313 purposes. My time compiling information, completing forms, and gathering backup information for audit purposes - 0.5 hours Technical. Typing forms and backup documentation - 0.5 hours Clerical. Management review and committee meetings - 0.5 hours Managerial.

7.1

No lead was brought on site for melting at the Lead Shop. Looked at the information gathered for 313 purposes. My time compiling information, completing forms, and gathering backup information for audit purposes - 0.5 hours Technical. Typing forms and backup documentation - 0.5 hours Clerical. Management review and committee meetings - 0.5 hours Managerial.

8.0

Our process is recycling or reuse. Tried to fit our operations with the questions on the forms. My time compiling information, completing forms, and gathering backup information for audit purposes - 0.5 hours Technical. Typing forms and backup documentation - 0.25 hours Clerical. Management review and committee meetings - 0.25 hours Managerial.

9.0

No lead was consumed on site. My time compiling information, completing forms, and gathering backup information for audit purposes - 0.25 hours Technical. Typing forms and backup documentation - 0.25 hours Clerical. Management review and committee meetings - 0.25 hours Managerial.

10.0

No lead melted was shipped off site. My time compiling information, completing forms, and gathering backup information for audit purposes - 0.25 hours Technical. Typing forms and backup documentation - 0.25 hours Clerical. Management review and committee meetings - 0.25 hours Managerial.

11.0

Calculated ending inventory from 313 information. My time compiling information, completing forms, and gathering backup information for audit purposes - 0.5 hours Technical. Typing forms and backup documentation - 0.5 hours Clerical. Management review and committee meetings - 0.5 hours Managerial.

11.1

Calculated using information from Question 5.0 and 313 information. My time compiling information, completing forms, and gathering backup information for audit purposes - 0.5 hours Technical. Typing forms and backup documentation - 0.5 hours Clerical. Management review and committee meetings - 0.5 hours Managerial.

12.0

Calculated using information from the 313 report. My time compiling information, completing forms, and gathering backup information for audit purposes - 0.25 hours Technical. Typing forms and backup documentation - 0.25 hours Clerical. Management review and committee meetings - 0.25 hours Managerial.

26.0

Recycling (pollution prevention) is the process. Could not answer this question because no consideration given to operations outside of manufacturing. My time compiling information, completing forms, and gathering backup information for audit purposes - 0.25 hours Technical. Typing forms and backup documentation - 0.25 hours Clerical. Management review and committee meetings - 0.25 hours Managerial.

*Burden Evaluation Form*  
**Burden of Toxic Chemical Use Reporting (Increased Labor Hours)**

Toxic Chemical Use Reporting, in general:

1. Standards for whether a facility is required to report or not have not changed. What has changed is the content of what is reported. Therefore, Compliance Determination and Rule Familiarization steps in the TRI process will not be impacted, in terms of increase in burden to a facility. However, Report Calculations and Completion, and Mailing and Record keeping components of the TRI process may require more work on the part of the facility. How much more work is required (in hours of labor) to maintain, collect, and report on the chemical use data elements (*over and above normal TRI reporting requirements*) per Form R?

Reporting Section/Elements	First Year: <u>Jan hours</u>				Subsequent Years:			
	Managerial	Technical	Clerical	Total	Managerial	Technical	Clerical	Total
<i>Inputs:</i>								
5) Starting Inventory of Substances	0.5	6.0	0.5	7 hrs				
5.1) Quantity of Starting Inventory that is Nonproduct Output	0.5	0.5	0.5	1.5 hrs				
6) Quantity Produced on Site	0.5	0.5	0.5	1.5 hrs				
7) Quantity Brought on Site	0.5	0.5	0.5	1.5 hrs				
7.1) Quantity of No. 7 (above) that is Brought on Site as Recycled Substance	0.5	0.5	0.5	1.5 hrs				
8) Quantity Recycled Out-of-Process on Site and Used on Site	0.25	0.5	0.25	1.0 hrs				

First Year: **IN** hours

Subsequent Years:

Reporting Section/Elements	Managerial	Technical	Clerical	Total	Managerial	Technical	Clerical	Total
<i>Outputs:</i> 9) Quantity Consumed on Site (chemically reacted in process)	0.25	0.25	0.25	0.75				
10) Quantity Shipped off Site as (or in) Product	0.25	0.25	0.25	0.75				
11) Ending Inventory	0.5	0.5	0.5	1.5				
11.1) Quantity of Ending Inventory that is Nonproduct Output	0.5	0.5	0.5	1.5				
12) Total Nonproduct Output (NPO) Generated	0.25	0.25	0.25	0.75				
<i>Pollution Prevention Activities:</i> 26) Has any pollution prevention method been employed to reduce the quantity of this substance during 1995 relative to 1994 levels? If "yes", fill in table.	0.25	0.25	0.25	0.75				
26.1) Material-Related Change (changes in the amount of substance used due to substitution of other non-listed substance)	—	—	—	—				

- ORNL -

Total 20 hrs

First Year:

Subsequent Years:

<i>Reporting Section/Elements</i>	<i>Managerial</i>	<i>Technical</i>	<i>Clerical</i>	<i>Total</i>	<i>Managerial</i>	<i>Technical</i>	<i>Clerical</i>	<i>Total</i>
26.2) Reformulation or Redesign of Product (resulting in the reduction of substance generated)	—	—	—	—				
26.3) Process or Procedure Modifications (using existing equipment to reduce substance generated)	—	—	—	—				
26.4) Equipment or Technology Modifications (using new equipment or technology to reduce substance generated)	—	—	—	—				
26.5) Improved Operations (due to housekeeping, training, material handling or inventory control to reduce substance generated)	—	—	—	—				
26.6) Miscellaneous describe _____	—	—	—	—				
<i>Section C: Facility-Level Substance-Specific Pollution Prevention Progress:</i> 4) Percent Reduction	—	—	—	—				

*Benefits Evaluation Form*  
**Benefits/Usefulness of Toxic Chemical Use Reporting**

---

Toxic Chemical Use Reporting, in general:

1. How effective is chemical use reporting to facilities and the general public in improving their understanding of the volumes and patterns of chemical use (rate on a 1-5 scale; 1-not effective, 2-slightly effective, 3-somewhat effective, 4-moderately effective, 5- highly effective)?

Why? The firms do not provide enough information to the public (someone that does not understand the questions and how terms are defined) to really understand what is reported. A good example is how a Release is defined in the regulations versus the public perception.

2. How useful is chemical use reporting to state agencies for the purposes of targeting state resources (rate on a 1-5 scale; 1-not useful, 2-slightly useful, 3-somewhat useful, 4-moderately useful, 5-highly useful)?

Why? From my perspective depends on the agencies understanding of the information provided on the firms.

3. Does chemical use reporting offer an improved basis for measuring progress in pollution prevention over current reporting information (rate on a 1-5 scale; 1-no, it offers no improvement, 2-yes, slightly improved, 3-yes, somewhat improved, 4-yes, moderately improved, 5-yes, highly improved)?

Why? Do not know - have tried to call someone in P2 - Sorry

4. Does chemical use reporting lead to improved toxic chemical management in facilities (rate on a 1-5 scale; 1-no, 2-yes, slightly improved, 3-yes, somewhat improved, 4-yes, moderately improved, 5-yes, highly improved)?

Why? Chemical use reporting may motivate firms to look for alternative, less toxic, chemicals to avoid reporting. Based on my experiences the P2 Program has done a good job in encouraging and recommending institutions.

5. Does chemical use reporting provide a better basis for promoting technology transfer among firms (rate on a 1-5 scale; 1-no, 2-yes, slightly better, 3-yes, somewhat better, 4-yes, moderately better, 5-yes, highly improved)?

Why?

6. How useful is chemical use reporting:  
(rate on a 1-5 scale; 1-not useful, 2-slightly useful, 3-somewhat useful, 4-moderately useful, 5-highly useful)

	1	2	3	4	5
For tracking toxics in products	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
As a P2 "scorecard"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
As a TRI "ledger check"		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For improving quality of TRI database	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For community level capability for looking at transportation-related issues	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For highlighting areas of potential cost savings and environmental benefit at facility	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For facility public relations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For facility inventory management	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Toxic Chemical Use Reporting, by data element:

7. Which data element categories are subject to potential misunderstanding about a facility:  
(rate on a 1-5 scale; 1-no potential, 2-little potential, 3-some potential, 4-moderate potential, 5-high potential)

	1	2	3	4	5
Inputs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outputs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pollution Prevention Activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Facility-Level Substance-Specific Pollution Prevention Progress	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Which specific data elements are the most subject to misunderstanding within each category?

The entire form was difficult to complete - had to make it fit for our situation.

Why? It seems that the forms are designed for manufacturing. If the chemical usage was not associated with manufacturing many of the questions were difficult or impossible to answer.

Which specific data elements are the least subject to misunderstanding within each category?

Why?

8. Please rate the usefulness of reporting the following data elements of chemical use (on a 1-5 scale; 1-not useful, 2-slightly useful, 3-somewhat useful, 4-moderately useful, 5-highly useful), to the public, the facility, and state regulators.

	Public	Facility	State Regulators
<u>Input Options</u>			
Starting inventory of substance (5.)	_____	_____	_____
Quantity of starting inventory that is NPO (5.1)	_____	_____	_____
Quantity produced on site (6.)	_____	_____	_____
Quantity brought on site (7.)	_____	_____	_____
Quantity brought on site as recycled substance (7.1)	_____	_____	_____
Quantity recycled out-of-process on site and used on site (8.)	_____	_____	_____
Input Options as a whole	_____	_____	_____
<u>Output Options</u>			
Quantity consumed on site (9.)	_____	_____	_____
Quantity shipped off site as (or in) product (10.)	_____	_____	_____
Ending inventory (11.)	_____	_____	_____
Quantity of ending inventory that is NPO (11.1)	_____	_____	_____
Total NPO generated (12.)	_____	_____	_____
Output Options as a whole	_____	_____	_____
<u>Pollution Prevention Activities</u>			
Has any pollution prevention method been employed to reduce the quantity of this substance during 1995 relative to 1994 levels? If "yes", fill in table. (26.)	_____	_____	_____
Material-Related change (changes in the amount of substance used due to substitution of other non-listed substance) (26.1)	_____	_____	_____
Reformulation or redesign of product (resulting in the reduction of substance generated) (26.2)	_____	_____	_____
Process or procedure modifications (using existing equipment to reduce substance generated) (26.3)	_____	_____	_____

	Public	Facility	State Regulators
Equipment or technology modifications (using new equipment or technology to reduce substance generated) (26.4)	_____	_____	_____
Improved operations (due to housekeeping, training, material handling or inventory control to reduce substance generated) (26.5)	_____	_____	_____
Miscellaneous describe _____	_____	_____	_____
_____ (26.6)	_____	_____	_____
Pollution Prevention Activities as a whole	_____	_____	_____
<u>Facility-Level Substance-Specific</u> <u>Pollution Prevention Progress</u> Percent reduction (4.)	_____	_____	_____

\_\_\_\_\_  
*Name of person(s) completing the forms*

\_\_\_\_\_  
*Date completed*

**INTENTIONALLY BLANK**

4-12 PLANT

LEAD

**TURA REPORT - COVER SHEET***Toxics Use Reduction Act - Form S Cover Sheet***Section 1: General Information**1.1 ATTACH MAILING LABEL with facility name  
address & DEP Facility Identification NumberATTACH CORRECTED MAILING LABEL or enter  
facility, name & address1.2 Are you making a trade secret claim for any of the information submitted in this COVER SHEET and/or Form S(s)? ☐ YES ☒ NO1.3 If YES, attach a statement substantiating the claim. Is this copy: ☒ Sanitized ☐ Unsanitized

1.4 This report is being filed for reporting year: 1997

**Section 2: Certification Statement**

2.0 This CERTIFICATION STATEMENT should be signed after all the forms have been completed.

I hereby certify that I have reviewed this and all attached documents and that, to the best of my knowledge and belief, the submitted information is true and complete and that the amounts and values in these documents are accurate based on measurements and/or reasonable estimates using data available to the preparers of these documents. I am aware that there are significant penalties for willful or intentional submission of false or incomplete information.

N/A  
Authorized Signature

Print Name

Position/Title

Date

**Section 3: Chemicals Previously Reported That Are Not Reportable This Year**

3.0 OPTIONAL QUESTION. In this section, you may provide information on any chemical reported last year that is not subject to reporting this year. If you substituted a non-listed chemical for a TURA chemical, you may identify the substitution, as well.

The codes to explain why the chemical is not reportable are: [1] Chemical Below Threshold But > 0 [2] No Chemical Usage in Reporting Year [3] Chemical Substitution [4] Chemical Eliminated (No Substitution) [5] Decline in Business [6] Other (Explain below in the additional comments section). Enter all the codes that apply.

3.1  
CAS # of Chemical Not Reportable (if applicable) Chemical Name  
Explanation of Why the Chemical Is Not Reportable. (Enter Code): ☐ ☐ ☐ ☐

CAS # of Chemical Substituted for TURA Chemical Chemical Name

3.2  
CAS # of Chemical Not Reportable (if applicable) Chemical Name  
Explanation of Why the Chemical Is Not Reportable. (Enter Code): ☐ ☐ ☐ ☐

CAS # of Chemical Substituted for TURA Chemical Chemical Name

Additional Comments:

Y-12 PLANT

1997

Page 2 of 5

FACILITY NAME

TOWN or TURA ID#

Reporting Year

## FORM S COVER SHEET (continued)

## Section 4: Facility-Wide Listing of Production Units

A PRODUCTION UNIT is best thought of as the combination of the process (or activities) used to produce a product or service and the product or service. In this block, please identify the PRODUCTION UNITS at the facility, then use the production unit number to report on chemical usage in the attached Form S. If there is a substantial change in a PRODUCTION UNIT from one reporting year to the next, the PRODUCTION UNIT must be given a new, unique number.

Production  
Unit #: 01This Production Unit (Process/Product Combination) is: ☐ The Same As Reported Last Year ☒ New

**Describe the Process:** Building 9201-1 is a complete machine shop facility used to perform large and small machining operations such as cutting, welding, drilling, forming of special components and individual items; and the assembly, testing, and packaging of the completed product. This building is divided into several shop areas such as the Saw Shop, Weld Shop, Tool Fabrication Shop, Precision Shop, and other general machine shops. Some of these operations are conducted in enclosed shops and open work areas. Microsol 165 solution (coolant/ lubricant) is circulated through a clean-up system and returned to the machine coolant system for re-use. The machine chips and/or turnings are removed from the coolant and disposed of through an appropriate metal waste bin. Operations performed in each of these shops are very similar, except that the Tool Fabrication Shop handles smaller components, thus requiring smaller equipment/tooling. For the purpose of this report, we focus our attention on the Tool Fabrication Shop, whereby a ten pound lead (Pb) plate was utilized. The process involved submerging the Pb plate in the coolant and drilling holes in it. Air emissions were negligible and approximately one pound of chips were considered waste. The remaining nine pounds was returned to the customer and used as a counter weight in equipment. In summary, this process is best described as "the removal of mass from substrate".

**Describe the Product:** The product is the nine pound modified Pb substrate, e.g. (Pb plate with specified holes drilled in it).

Enter the four-digit SIC Code(s) that best describe(s) the product:

3 4 9 9

Describe the Unit of Product: Pounds and/or number of lead substrates undergone modifications.  
(Please specify if the Unit of Product has been changed since the previous reporting year.)

## PRODUCTION PROCESS STEP INFORMATION FOR THIS PRODUCTION UNIT

Enter the production process code(s) to identify the process step(s) that involves a TUR-reportable chemical(s) as an input, output or throughput. (See the reporting guidance document for the list of production process codes and instructions on when a given code needs to be listed.)

1. B B 0 5 2. 3. 4.

5. 6. 7. 8.

List below, the TURA-reportable chemicals associated with the production unit. If a chemical is associated with ALL the process steps identified above, check the ALL block. If the chemical is associated with some but not all of the process steps, put the relevant code(s) (from above) next to the chemical

Chemical(s)

Production Process

Lead Metal  
Chemical Name

X ALL

007439921  
CAS#

Chemical Name

ALL

CAS#

Chemical Name

ALL

CAS#

## FORMS COVER SHEET (Continuation Page, for use, if necessary)

## Section 4: Facility-Wide Listing of Production Units

Production  
ID #: N/A

### PRODUCTION PROCESS STEP INFORMATION FOR THIS PRODUCTION UNIT

Enter the production process code(s) to identify the process step(s) that involves a TUR-reportable chemical(s) as an input, output or throughput. (See the reporting guidance document for the list of production process codes and instructions on when a given code needs to be listed.)

1. | | | | 2. | | | | 3. | | | | 4. | | | |

5. | | | | 6. | | | | 7. | | | | 8. | | | |

List below, the TURA-reportable chemicals associated with the production unit. If a chemical is associated with **ALL** the process steps identified above, check the **All** block. If the chemical is associated with some but not all of the process steps, put the relevant code(s) (from above) next to the chemical.

Chemical(s)

### Production Process(es)

**Chemical Name**

ALL | | | | |

CAS#

[illegible]

**Chemical Name**

ALL | | | | | | | |

CAS#

\_\_\_\_\_

Chemical Name

ALL | | | | | | | | | |

CAS#

\_\_\_\_\_

Chemical Name

ALL | | | | | | | |

CAS#

[illegible]

**Chemical Name**

ALL | | | | | | | |

CAS#

**Chemical Name**

ALL | | | | | | | |

CAS#

Facility Name: <u>Y-12 PLANT</u>	Facility ID#
Chemical: <u>LGAD</u>	Reporting Year: <u>1997</u>

## Massachusetts Department of Environmental Protection

**TURA REPORT - FORM S***Toxics Use Reduction Act - Chemical Usage Facility-Wide & by Production Units**Section 1: Facility-Wide Usage of Listed Chemical*

1. 007439921 Lead  
 Chemical Abstract Service (CAS) Number (if applicable) Chemical Identification (from Form R)

1.2 Facility-Wide Usage of Chemical Identified in 1.1 above. Enter total amount (in POUNDS) for each applicable category.

NOTE: Byproduct (item 1.2d) generally means all wastes containing the listed chemical before the waste is treated or recycled. Read the instructions carefully, however, before completing this section.

1.2a Manufactured: 0 1.2d Generated as Byproduct: 1

1.2b Processed: 0 1.2e Shipped in or as Product: 9

1.2c Otherwise Used: 10

1.3 OPTIONAL QUESTION. When the amounts reported in 1.2a, 1.2b, and 1.2c are added together, the sum will — in many cases — equal the sum of 1.2d and 1.2e. In other words, the left and right columns will often form a "materials balance." If the two columns are not in approximate balance, you may use this block to explain why. Mark all the reasons that apply, or indicate the number of pounds in the appropriate block below. (i.e.: 4,000 Chemical was held in inventory).

       Chemical was recycled on site.        Chemical was consumed or transformed.

       Chemical was held in inventory.        Chemical is a compound.

  X   Other (explain):

The remaining 9 pounds (end product e.g., lead substrate) was returned to the customer for use.

OPTIONAL QUESTION: Did anything non-routine occur at your facility during the reporting year which affected the data reported?

       YES   X   NO If YES, you may use this space to comment:

*Section 2: Chemicals Used in Waste Treatment Units*

Is this chemical used to treat waste or control pollution?        YES   X   NO

If YES, enter the quantity of chemical code for the amount used to treat waste or control pollution:   

OPTIONAL — You may enter the amount:       

*Section 3: TURA Report on Production Unit #: 01 (Enter # from the Form S Cover Sheet.)*

3.1 Base Year: 1997 3.4 Byproduct Reduction Index:   0  

3.2 Quantity of Chemical Code: [A] 3.5 Emissions Reduction Index:   0  

3.3 Toxics Use Reduction Techniques Code:   

If there has been a change from one reporting year to the current year in a (1) base year, and/or (2) estimating methods (that significantly alter previously reported data) for this PRODUCTION UNIT REPORT, describe the change:



Toxic Use Reduction Act (TURA) - *Form S* (Massachusetts)  
COVER SHEET

**Section 1: General Information**

- 1.1 Mailing Label \_\_\_\_\_ 1.2 Making Trade Secret YES \_ NO **x**  
1.3 **x** Sanitized \_\_\_\_\_ Unsanitized 1.4 This report is for reporting year **1997**

**Section 2: Certification Statement**

NA (not applicable)

**Section 3: Chemicals Previously Reported.....**

NA

**Section 4: Facility-Wide Listing of Production Units**

**Production Unit#: 01**

***Describe the Process:***

Building 9201-1 is a complete machine shop facility used to perform large and small machining operations such as cutting, welding, drilling, forming of special components and individual items; and the assembly, testing, and packaging of the completed product. This building is divided into several shop areas such as Saw Shop, Weld Shop, Tool Fabrication Shop, Precision Shop and other general machine shops. Some of these operations are conducted in enclosed shops and open work areas. Microsol 165 solution (coolant) is circulated through a clean-up system and returned to the machine coolant system for re-use. The machine chips, and/or turnings are removed from the coolant and disposed of through an appropriate metal waste bin. Operations performed in each of these shops are very similar, except that the Tool Fabrication Shop handles smaller components, thus requiring smaller equipment/tooling.

For the purpose of this report, we focus our attention on the Tool Fabrication Shop, whereby a ten pound lead (Pb) plate was utilized. The process involved submerging the Pb plate in the coolant and drilling holes in it, thus negligible Pb air emissions with approximately one pound of chips as waste. The remaining nine pounds was returned to the requester to use as a counter weight in equipment. In summary and according to the Form S guidelines, this process is best described as "*the removal of mass from substrate*".

***Describe the Product:***

The product is the modified Pb substrate e.g., ( Pb plate with specified holes drilled in it).

***Four digit SIC Code :*** 3499

***Describe the Unit of Product:***

Pounds and/or number of lead substrate request for modifications

***Production Process Step Information for this Production Unit:***

1.0 BB05

<u>Chemical</u>	<u>Production Process</u>	<u>CAS#</u>
Lead Metal	<input checked="" type="checkbox"/> ALL	007439921

## TURA REPORT - FORM S

### Section 1: Facility-Wide Usage of Listed Chemical

1.1 CAS#: 007439921      Chemical Identification (from Form R): Lead

1.2a. 0#    1.2b. 0#    1.2c. 10#    1.2d. 1#    1.2e. 9#

1.3 Optional: The sum of 1.2a, 1.2b, and 1.2c added together should equal the sum 1.2d, & 1.2e  
*Why?* The remaining 9 lbs (end product) was returned to the customer for use as a counter weight in equipment. Also refer to section 4 "Describe the Process" for additional information.

1.4 Optional: *No*, for non-routine occurrence that may have affected the data reported.

### Section 2: Chemicals Used in Waste Treatment Units

2.1 Is chemical used to treat waste or control pollution? *No*

### Section 3: TURA Report on Production Unit# 01

3.1 Base Year: 1997      3.2 Qty. Of Chemical Code: A

3.4 Byproduct Reduction Index: 0#      3.5 Emissions Reduction Index: 0#

3.3 Toxic Use Reduction Techniques Code: NA

Not able to use the above (3.3) due to difference in release/activities in 1996 vs 1997 for lead. Information (detail) is given in the summary on the New Jersey form in section 4.0, *Percent Reduction*.

rae

## RELEASE &amp; POLLUTION PREVENTION REPORT FOR 1995

**SECTION B. FACILITY-LEVEL SUBSTANCE-SPECIFIC INFORMATION**

Submit one complete Section B for each reportable substance (listed in Appendices B and C of the instructions) manufactured, processed, or otherwise used in excess of 10,000 pounds in 1995.

Y-12 PLANT		1.1 CAS No. (Category No.)  7439-92-1
		1.2 RTK Substance No.
1.3 Substance Name (Category Name)  LEAD		
2. ACTIVITIES AND USES OF THE SUBSTANCE AT THE FACILITY (Check all that apply.)		
2.1 Manufacture the substance:	a. <input type="checkbox"/> Product b. <input type="checkbox"/> Import	If produce or import: c. <input type="checkbox"/> For on-site use/processing e. <input type="checkbox"/> As a byproduct d. <input type="checkbox"/> For sale/distribution f. <input type="checkbox"/> As an impurity
2.2 Process the substance:	a. <input type="checkbox"/> As a reactant    b. <input type="checkbox"/> As a formulation component    c. <input type="checkbox"/> As an article component    d. <input type="checkbox"/> Repackaging	
2.3 Otherwise use the substance:	a. <input type="checkbox"/> As a chemical processing aid    b. <input type="checkbox"/> As a manufacturing aid    c. <input checked="" type="checkbox"/> Ancillary or other use	
3.1 Principal Method of Storage:		
3.2 Frequency of Transfer from Storage: _____ times per _____		
3.3 Methods of Transfer:		

**INVENTORY AND THROUGHPUT INFORMATION**

Inventory:	Quantity (pounds)	Basis of Estimate (circle one)
4. Maximum Daily Inventory of the Substance		M C E O
<b>Inputs</b>		
5. Starting Inventory of Substance	10	M C E O
5.1 Quantity of Starting Inventory that is Nonproduct Output	1	M C E O
6. Quantity Produced on Site	0	M C E O
7. Quantity Brought on Site	0	M C E O
7.1 Quantity of No. 7. (above) that is Brought on Site as Recycled Substance	0	M C E O
8. Quantity Recycled Out-of-Process on Site and Used on Site	0	M C E O
<b>Outputs</b>		
9. Quantity Consumed on Site (chemically reacted in process)	0	M C E O
10. Quantity Shipped off Site as (or in) Product	0	M C E O
11. Ending Inventory	9	M C E O
11.1 Quantity of Ending Inventory that is Nonproduct Output	1	M C E O
12. Total Nonproduct Output (NPO) Generated	1	M T
<b>Other:</b>		
13. Quantity Destroyed through On-Site Treatment		M C E O
14. Quantity Destroyed through On-Site Energy Recovery		M C E O

25. Have any reductions in the use of the substance or generation of the substance as nonproduct output (NPO) occurred during 1995 due to discontinuance of operations?

☐ Yes ☐ No If "Yes," fill in below:

Quantity of Substance Reduced (pounds) (1994 to 1995)	Basis of Estimate
Quantity of substance reduced (1994 to 1995) due to discontinuance of operations, including operations transferred to or undertaken by another facility	M C E O

### POLLUTION PREVENTION ACTIVITIES

For the purpose of this Section and Sections C and D of this Report, pollution prevention means: the reduction or elimination of either the use of the substance or the generation of the substance as nonproduct output, prior to treatment, storage, out-of-process recycling or disposal. Pollution prevention is not any type of treatment, out-of-process recycling, incineration, or the transfer of releases to different media.

25. Has any pollution prevention method been employed to reduce the quantity of this substance during 1995 relative to 1994 1995 levels? ☐ Yes ☒ No If "Yes," fill in below:

Provide quantity of substance reduced (lbs) 1995 to 1996

POLLUTION PREVENTION METHODOLOGY (Complete all appropriate sections)	Quantity of Substance Reduced (pounds) (1994 to 1995)	Basis of Estimate
25.1 Material-Related Change (changes in the amount of substance used due to substitution of other non-listed substance)		M C E O
Name and Quantity of Substance Substance QUANTITY (lb)		
a) N/A		
b)		
c)		

\* Facilities in SIC codes 25, 28, 30, 33 and 34 STOP HERE. Do not finish this page! Go on to Sections C and D. Facilities in all other SIC codes complete this page.

	Quantity of Substance Reduced (pounds) (1994 to 1995)	Basis of Estimate
25.2 Reformulation or Redesign of Product (resulting in the reduction of substance generated)		M C E O
25.3 Process or Procedure Modifications (using existing equipment to reduce substance generated)		M C E O
25.4 Equipment or Technology Modifications (using new equipment or technology to reduce substance generated)		M C E O
25.5 Improved Operations (due to housekeeping, training, material handling or inventory control to reduce substance generated)		M C E O
25.5 Miscellaneous (Describe: _____)		M C E O

27. Does your facility anticipate reducing the use or generation of the substance as nonproduct output in the future due to pollution prevention? ☐ Yes ☐ No If "Yes," indicate your projections in the table below.

PROJECTION	YEAR	
	1997	2000
Reduction in the quantity of the substance used or generated as NPO per year due to pollution prevention assuming production is constant (pounds)		

# RELEASE & POLLUTION PREVENTION REPORT FOR 1995

ONLY FACILITIES IN SIC CODES 25, 26, 30, 33 OR 34 COMPLETE THIS SECTION.

## SECTION C. FACILITY-LEVEL SUBSTANCE-SPECIFIC POLLUTION PREVENTION PROGRESS

Submit one complete Section C for each reportable substance (listed in Appendices B and C of the instructions) manufactured, processed or otherwise used in excess of 10,000 pounds in 1995. Do not complete this Section for substances noted with an asterisk (\*) or a check mark (✓) in Appendices B and C.

Y-12 PLANT	1.1 CAS No. (Category No.)
	7439-92-1
FACILITY LOCATION INFORMATION	1.2 Substance Name (Category Name)
	Lead

2.1 Are the facility-level, substance-specific goals stated in Section B of your Pollution Prevention Plan Summary of 1993 based on constant production? ☐ Yes ☐ No

2.2 If you answered "NO" to Question 2.1, restate your facility-level, substance-specific Use and NPO goals for this substance as if production were constant (see instructions). If you answered "YES," or if you already restated your goals under this question last year, leave this question blank.

Use	NPO
b.	b.
%	%

3. Production Ratio or Activity Index is is L Auerst Film R, Section 8.109 = N/A

4. Percent Reduction = N/A

Use	NPO
%	%

5. Check here if you classified any outputs for this substance as co-product on Section B, Question 2 of your 1993 Pollution Prevention Plan Summary. If you check this box, call the Office of Pollution Prevention at (508) 777-0518 for special instructions on how to report the effects of co-product sales on your pollution prevention reduction numbers. ☐

6. Note the identification numbers of any production processes that your facility discontinued or sent off site in 1995. These numbers should match those identified in your Pollution Prevention Plan and Section C of your Pollution Prevention Plan Summary. If any of the listed processes involved more than one reportable substance, identify the process ID only once on a single Section C. If no production processes were discontinued or sent off site in 1995, leave this blank.

7. CERTIFICATION OF OWNER OR OPERATOR (Required only on one Section C.) — I certify under penalty of law that the information submitted in Sections C and D of this report is true, accurate and complete to the best of my knowledge.

Signature \_\_\_\_\_

Date \_\_\_\_\_

Phone No. (\_\_\_\_) \_\_\_\_\_

# 1995 Release and Pollution Prevention Report

## Self Verification of Materials Accounting Data

(All Quantities Must Be Reported In Pounds)

NJEIN: \_\_\_\_\_

CAS#: 7439-92-1

Substance: Lead Metal (Pb)

### Inputs

5. Starting Inventory

10

6. Quantity Produced  
On Site

0

7. Quantity Brought  
On Site

0

### Outputs

9. Quantity Consumed  
(chemically altered)

0

10. Quantity Shipped Off Site  
as (or in) Product

0

11. Ending Inventory

9

13. Quantity Destroyed through  
On-Site Treatment

1

\*\*

14. Quantity Destroyed through  
On-Site Energy Recovery

0

15. Stack Air Emissions

negligible

16. Fugitive Air Emissions

negligible

17. Discharge to POTWs

0

18. Discharge to Surface Waters

0

19. Discharge to Groundwaters

0

20. On-Site Land Disposal

0

21. Other Off-Site Transfers

0

Sum of Inputs:

10

Sum of Outputs:

10

\*\* Primarily metals are treated, not destroyed

## New Jersey - Form S

### 5.0 Starting Inventory of Substance on Site

#### Background/Inventory

Based on the material selected and plant-wide inquiries, one process was identified and selected for this report. Building 9201-1 is a complete machine shop facility used to perform large and small machining operations such as cutting, welding, drilling, forming of special components and individual items; and the assembly, testing, and packaging of the completed product. This building is divided into several shop areas such as Saw Shop, Weld Shop, Tool Fabrication Shop, Precision Shop and other general machine shops. Some of these operations are conducted in enclosed shops and open work areas. Microsol 165 solution (coolant) is circulated through a clean-up system and returned to the machine coolant system for re-use. The machine chips, and/or turnings are removed from the coolant and disposed of through an appropriate metal waste bin. Operations performed in each of these shops are very similar, except that the Tool Fabrication Shop handles smaller components, thus requiring smaller equipment/tooling.

For the purpose of this report, we focus our attention on the Tool Fabrication Shop, whereby a **ten pound** lead (Pb) plate was utilized in CY 1997. The process involved submerging the Pb plate in the coolant and drilling holes in it, thus negligible Pb air emissions with approximately **one pound** of chips as waste. The remaining **nine pounds** was returned to the requester to use as a counter weight in equipment. In summary and according to the Form S guidelines, this process is best described as "**the removal of mass from substrate**", and starting inventory = **~10 lbs.**

#### 5.1 Starting Inventory that is NPO

The quantity of starting inventory that is Nonproduct Output is the chips/turnings generated from the drilling of holes in the Pb substrate. It was determined that this amount = **~1 lb** in CY 1997.

Pb to air from drilling process was determined to be **negligible** due to the fact the process was conducted under the coolant.

The Tool Fabrication Shop is located inside a building 9201-1 with no patent drains to the Storm Water System. Therefore in summary, **starting inventory that is NPO = ~1 lb.**

### 6.0 Quantity Produced on Site

No Pb was produced on site

### **7.0 *Quantity Brought on Site***

No Pb was brought on site for processing in 9201-1. As stated above only used the Pb indicated in number 5.0. Procurement of Pb was brought on site (article) i.e. Pb bricks and used for shielding.

### **7.1 *Quantity of No. 7.0 that was brought on Site as Recycled Substance***

No Pb was brought on site as recycled substance for processing at 9201-1 in CY 1997.

### **8.0 *Quantity Recycled Out-of-Process on Site and Used on Site***

The 1 lb of Pb chips which resulted from drilling process was recycled in-process i.e. extracted from the coolant and disposed in a metal waste bin. Therefore, no Pb was recycled out-of-process and used on site at 9201-1 in CY 1997.

### **9.0 *Quantity Consumed on Site (chemically reacted in process)***

No Pb was consumed on site in CY 1997, i.e. its molecular structure was altered.

### **10.0 *Quantity Shipped off Site as (or in) Product***

No Pb product was shipped off site as a result from 9201-1 processing in CY 1997.

### **11.0 *Ending Inventory***

Due to the 1 lbs of chips/turning generated in CY 1997 remained on Site in waste, the ending inventory = 9 lbs.

### **11.1 *Quantity of Ending Inventory that is NPO***

As stated earlier (5.1), the ending inventory that is NPO = 1 lb.

### **12.0 *Total NPO Generated***

As stated in (11.1), the total NPO generated in CY 1997 at 9201-1 is = 1 lb.

**26.0 *Has any Pollution Prevention method been employed to reduce the quantity....***

In CY 1997, at 9201-1 no pollution prevention was employed i.e. to reduce or eliminate of either the use of Pb or the generation of NPO, prior to treatment, storage, out-of-process recycling or disposal. **Note:** Pollution Prevention is not any type of treatment, out-of-process recycling, incineration, or the transfer to another media.

**27.0 *Does your facility anticipate reducing the use or generation of the substance as NPO...***

No, only small quantities of NPO is generated and handled accordingly, i.e. funding is not a priority.

**Section C**

**1.1 CAS No.:** 007439921

**1.2 Substance Name:** Lead

**3.0 Production Ratio**

Unable to complete this section due to the no Pb activity was conducted in CY 1996 at 9201-1, therefore production ratio = NA (not applicable)

**4.0 Percent Reduction**

Unable to complete this section due to the Pb activity conducted in CY 1996 differs from activity of Pb conducted in CY 1997. In other words in CY 1996 Pb activity was conducted in building 9766 (Model Shop) whereby 15 lbs of Pb was used in fabricating ingots with an estimated release to air of less than 1 lbs.. Negligible amount of NPO was generated thus not appropriate to compare and/or calculate percent reduction with respect to activities conducted in 9201-1. In summary percent reduction = NA.

NJ Form S (continued)

Section B: *Inputs*

5. Starting Inventory = 10# for (9201-1)... Note: 8# from fly ash ETP in CY96 + 10# fly ash from ETP in CY 97.

5.1 Starting inventory Nonproduct Output = 1# (turnings from 9201-1)

6.0 Qty Produced on site = 0#

7.0 Qty Brought on site = 0#

7.1 & 8.0 Qty brought as recycle... = 0#

*Outputs:*

9.0 Qty consumed on site chemically = 0#

10. Qty shipped off-site as product = 0#

11. Ending Inventory = 9#

11.1 Qty of ending inventory that is NPO = 1#

12. Total NPO generated = 1#

Basis of estimates = O ; for question 12 = T

Note: The information above represents the events/process for 9201-1 during CY 97 only. Concerns with recipients comparing this information to CY 97 Form R submittals.

rae (Y-12 Plant)

Y-12 Plant

*Burden Evaluation Form*  
 Burden of Toxic Chemical Use Reporting (Increased Labor Hours)

Toxic Chemical Use Reporting, in general:

- Standards for whether a facility is required to report or not have not changed. What has changed is the content of what is reported. Therefore, Compliance Determination and Rule Familiarization steps in the TRI process will not be impacted, in terms of increase in burden to a facility. However, Report Calculations and Completion, and Mailing and Record keeping components of the TRI process may require more work on the part of the facility. How much more work is required (in hours of labor) to maintain, collect, and report on the chemical use data elements (over and above normal TRI reporting requirements) per Form R?

*First Year: 1997*

*Subsequent Years:*

<i>Reporting Section/Elements</i>	<i>Managerial</i>	<i>Technical</i>	<i>Clerical</i>	<i>Total</i>	<i>Managerial</i>	<i>Technical</i>	<i>Clerical</i>	<i>Total</i>
<i>Inputs:</i>								
5) Starting Inventory of Substances	0.09	3.0	0.17	3.26				
5.1) Quantity of Starting Inventory that is Nonproduct Output	0.09	0.5	0.17	0.76				
6) Quantity Produced on Site	0.09	0.17	0.17	0.43				
7) Quantity Brought on Site	0.09	0.17	0.17	0.43				
7.1) Quantity of No. 7 (above) that is Brought on Site as Recycled Substance	0.09	0.25	0.17	0.51				
8) Quantity Recycled Out-of-Process on Site and Used on Site	0.09	0.25	0.17	0.51				

## Y-12 Plant con't

First Year: 1997

Subsequent Years:

Reporting Section/Elements	Managerial	Technical	Clerical	Total	Managerial	Technical	Clerical	Total
<i>Outputs:</i>								
9) Quantity Consumed on Site (chemically reacted in process)	0.09	0.25	0.17	0.51				
10) Quantity Shipped off Site as (or in) Product	0.09	0.25	0.17	0.51				
11) Ending Inventory	0.09	0.25	0.17	0.51				
11.1) Quantity of Ending inventory that is Nonproduct Output	0.09	0.5	0.17	0.76				
12) Total Nonproduct Output (NPO) Generated	0.09	0.5	0.17	0.76				
<i>Pollution Prevention Activities:</i> 26) Has any pollution prevention method been employed to reduce the quantity of this substance during 1995 relative to 1994 levels? If "yes", fill in table.	0.09	0.25	0.17	0.51				
26.1) Material-Related Change (changes in the amount of substance used due to substitution of other non-listed substance)	0.09	0.25	0.17	0.51				

First Year:

Subsequent Years:

First Year: 1997

Y-12 Plant con't

Reporting Section/Elements	Managerial	Technical	Clerical	Total	Managerial	Technical	Clerical	Total
26.2) Reformulation or Redesign of Product (resulting in the reduction of substance generated)	0.09	0.25	0.17	0.51				
26.3) Process or Procedure Modifications (using existing equipment to reduce substance generated)	0.09	0.25	0.17	0.51				
26.4) Equipment or Technology Modifications (using new equipment or technology to reduce substance generated)	0.09	0.25	0.17	0.51				
26.5) Improved Operations (due to housekeeping, training, material handling or inventory control to reduce substance generated)	0.09	0.25	0.17	0.51				
26.6) Miscellaneous describe _____	****	****	****	****				
Section C: Facility-Level Substance-Specific Pollution Prevention Progress: 4) Percent Reduction	0.09	0.25	0.17	0.51				

Grand Total = 12.52 hrs. for Chromium

Note: Average time estimated equals that for Lead, even though Chromium was below the reportable threshold but greater than zero; i.e. requires same inquiries and documentation.

*Benefits Evaluation Form*  
**Benefits/Usefulness of Toxic Chemical Use Reporting**

---

Toxic Chemical Use Reporting, in general: *U.S. DOE Y-12 Plant*

1. How effective is chemical use reporting to facilities and the general public in improving their understanding of the volumes and patterns of chemical use (rate on a scale; 1-not effective, 2-slightly effective, 3-somewhat effective, 4-moderately effective, 5-highly effective)?
- Why?

*As a result of the current reporting requirements so stated under EPCRA section 313, most facilities are utilizing the release data to identify process, storage, and handling modifications to minimize chemical losses and to save money. Chemical use reporting may be somewhat effective in forcing facilities to understand their volumes and patterns of chemical uses, however for those facilities with active and aggressive Pollution Prevention (P2) programs, chemical use reporting will be ineffective and yet another burden on the facility. P2 focuses on a particular process as opposed to a particular material utilized/aggregated across the plant/reservation. A more effective method of improving their understanding by both the public and facilities would be to restrict applicable permits i.e., discharge and disposal of chemicals via establishing the Environmental Media (e.g. air, water, soil), Quality objectives and standards that protects human health and the environment. In conclusion, I'm not convinced that the public has an understanding on the existing section 313 reports and to append additional data only increases the level of uncertainty, misunderstanding and overwhelms EPA's databases.*

*Note: It is now August 1998, and the 1997 TRI data was submitted to EPA in June 1998. To date, the information is not available via computer, and once made available will it be correct???.....any takers.....what's wrong with this picture!!!*

2. How useful is chemical use reporting to state agencies for the purposes of targeting state resources (rate on a 1-5 scale; 1-not useful, 2-slightly useful, 3-somewhat useful, 4-moderately useful, 5-highly useful)?

Why?

*Section 313 reports are utilized to assist government agencies and others in research efforts, and the development of regulations, guidelines, and standards. Chemical use data if used properly, may allow state agencies to understand where to focus their resources in encouraging P2 initiatives. However, state agencies distribution of resources are based on the EPA program grants (Federally supported), i.e. more dollars more state resources. Also, most state resources funded by these grants are administrative and are necessary to support EPA's paper log jams and not real environmental quality improvements.*

3. Does chemical use reporting offer an improved basis for measuring progress in pollution prevention over current reporting information (rate on a 1-5 scale; ①no, it offers no improvement, 2=yes, slightly improved, 3=yes, somewhat improved, 4=yes, moderately improved, 5=yes, highly improved)?

Why?

*No, section 313 reporting process is an aggregate of all the activities surrounding the use of selected material in oppose to P2 whereby it focus on a particular process i.e. source reduction and recycling activities. The methodology, e.g. Pollution Prevention Opportunity Assessments (PPOA) is utilized to identify P2 options for a specific process. Since section 313 reporting involves air emissions, etc., a systematic problem occurs i.e., these projects do not have the "return on investment" associated with waste storage/treatment/disposal, as do other P2 projects. In some cases these projects are not funded. In conclusion, the section 313 reporting coupled with chemical use data will not be significant tool in identifying P2 projects, it will simply overwhelm the system with data.*

4. Does chemical use reporting lead to improved toxic chemical management in facilities (rate on 1-5 scale; ①no, 2=yes, slightly improved, 3=yes, somewhat improved, 4=yes, moderately improved, 5=yes, highly improved)?

Why?

*As mentioned earlier chemical use data already exist and reporting it is one thing, effective management of toxic chemicals is another, e.g. spill containment would not be significantly improved. Focusing on reporting in order to promote or improve toxic chemical management is similar to trying to inspect end quality to a product...it does not work....quality should be built in at the on-set.*

5. Does chemical use reporting provide a better basis for promoting technology transfer among firms (rate on a 1-5 scale; ①no, 2=yes, slightly better, 3=yes, somewhat better, 4=yes, moderately better, 5=yes, highly improved)?

Why?

*No, within an industrial group the chemical use reports would be useful to competitors and chemical suppliers to target new marketing strategies; thus not promoting technology transfer. Are we skewing the purpose, scope of EPCRA section 313 reporting to satisfy special interest groups?*

5. Does chemical use reporting provide a better basis for promoting technology transfer among firms (rate on a 1-5 scale; 1-no, 2-yes, slightly better, 3-yes, somewhat better, 4-yes, moderately better, 5-yes, highly improved)?

Why?

6. How useful is chemical use reporting:  
(rate on a 1-5 scale; 1-not useful, 2-slightly useful, 3-somewhat useful, 4-moderately useful, 5-highly useful)

	1	2	3	4	5
For tracking toxics in products	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
As a P2 "scorecard"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
As a TRI "ledger check"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
For improving quality of TRI database	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For community level capability for looking at transportation-related issues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
For highlighting areas of potential cost savings and environmental benefit at facility	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For facility public relations	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For facility inventory management	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Toxic Chemical Use Reporting, by data element:

7. Which data element categories are subject to potential misunderstanding about a facility:  
(rate on a 1-5 scale; 1-no potential, 2-little potential, 3-some potential, 4-moderate potential, 5-high potential)

	1	2	3	4	5
Inputs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Outputs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pollution Prevention Activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Facility-Level Substance-Specific Pollution Prevention Progress	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Which specific data elements are the most subject to misunderstanding within each category?

"Inputs"

Why?

Using a standardized form does not allow for additional information i.e., to explain the meaning of the data elements. Example given are starting inventory and NPO data.

Which specific data elements are the least subject to misunderstanding within each category?

"Pollution Prevention"

Why?

Pollution Prevention is part of and/or similar to the same information requested on the Form R reports. Source reduction and recycling activities seems to be more attractive in the public's opinion.

8. Please rate the usefulness of reporting the following data elements of chemical use (on a 1-5 scale; 1-not useful, 2-slightly useful, 3-somewhat useful, 4-moderately useful, 5-highly useful), to the public, the facility, and state regulators.

	Public	Facility	State Regulators
<u>Input Options</u>			
Starting inventory of substance (5.)	<u>1</u>	<u>5</u>	<u>2</u>
Quantity of starting inventory that is NPO (5.1)	<u>1</u>	<u>5</u>	<u>2</u>
Quantity produced on site (6.)	<u>2</u>	<u>5</u>	<u>2</u>
Quantity brought on site (7.)	<u>2</u>	<u>5</u>	<u>2</u>
Quantity brought on site as recycled substance (7.1)	<u>1</u>	<u>5</u>	<u>1</u>
Quantity recycled out-of-process on site and used on site (8.)	<u>1</u>	<u>5</u>	<u>1</u>
Input Options as a whole	<u>1</u>	<u>5</u>	<u>1</u>
<u>Output Options</u>			
Quantity consumed on site (9.)	<u>1</u>	<u>5</u>	<u>2</u>
Quantity shipped off site as (or in) product (10.)	<u>2</u>	<u>5</u>	<u>2</u>
Ending inventory (11.)	<u>1</u>	<u>5</u>	<u>2</u>
Quantity of ending inventory that is NPO (11.1)	<u>1</u>	<u>5</u>	<u>2</u>
Total NPO generated (12.)	<u>1</u>	<u>5</u>	<u>2</u>
Output Options as a whole	<u>1</u>	<u>5</u>	<u>2</u>
<u>Pollution Prevention Activities</u>			
Has any pollution prevention method been employed to reduce the quantity of this substance during 1995 relative to 1994 levels? If "yes", fill in table. (26.)	<u>2</u>	<u>3</u>	<u>2</u>
Material-Related change (changes in the amount of substance used due to substitution of other non-listed substance) (26.1)	<u>2</u>	<u>3</u>	<u>2</u>
Reformulation or redesign of product (resulting in the reduction of substance generated) (26.2)	<u>2</u>	<u>3</u>	<u>2</u>
Process or procedure modifications (using existing equipment to reduce substance generated) (26.3)	<u>2</u>	<u>3</u>	<u>2</u>

1997

	Public	Facility	State Regulators
Equipment or technology modifications (using new equipment or technology to reduce substance generated) (26.4)	<u>2</u>	<u>4</u>	<u>2</u>
Improved operations (due to housekeeping, training, material handling or inventory control to reduce substance generated) (26.5)	<u>2</u>	<u>4</u>	<u>2</u>
Miscellaneous describe _____ _____ (26.6)	<u>2</u>	<u>4</u>	<u>2</u>
Pollution Prevention Activities as a whole	<u>2</u>	<u>5</u>	<u>2</u>
<u>Facility-Level Substance-Specific Pollution Prevention Progress</u> Percent reduction (4.)	<u>2</u>	<u>5</u>	<u>2</u>

RON EVANS  
Name of person(s) completing the forms

7/22/98  
Date completed

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## RELEASE &amp; POLLUTION PREVENTION REPORT FOR 1995

**SECTION B. FACILITY-LEVEL SUBSTANCE-SPECIFIC INFORMATION**

Submit one complete Section B for each reportable substance (listed in Appendices B and C of the instructions) manufactured, processed, or otherwise used in excess of 10,000 pounds in 1995.

ETTP		1.1 CAS No. (Category No.)  <div style="text-align: center; font-size: 1.5em;">007439931</div>
		1.2 RTK Substance No.
1.3	Substance Name (Category Name) <div style="text-align: center; font-size: 1.5em;">LEAD METAL</div>	
2. ACTIVITIES AND USES OF THE SUBSTANCE AT THE FACILITY (Check all that apply.)		
2.1	Manufacture the substance: a. <input type="checkbox"/> Produce b. <input type="checkbox"/> Import	If produce or import: c. <input type="checkbox"/> For on-site use/processing e. <input type="checkbox"/> As a byproduct d. <input type="checkbox"/> For sale/distribution f. <input type="checkbox"/> As an impurity
2.2	Process the substance: a. <input type="checkbox"/> As a reactant    b. <input type="checkbox"/> As a formulation component    c. <input type="checkbox"/> As an article component    d. <input type="checkbox"/> Repackaging	
2.3	Otherwise use the substance: a. <input type="checkbox"/> As a chemical processing aid    b. <input type="checkbox"/> As a manufacturing aid    c. <input type="checkbox"/> Ancillary or other use	
3.1	Principal Method of Storage:	
3.2	Frequency of Transfer from Storage: _____ times per _____	
3.3	Methods of Transfer:	

**INVENTORY AND THROUGHPUT INFORMATION****Inventory:**

	Quantity (pounds)	Basis of Estimate (circle one)
4. Maximum Daily Inventory of the Substance		M C E O

**Inputs**

	Quantity	Basis of Estimate
5. Starting Inventory of Substance	ϕ	M C E O
5.1 Quantity of Starting Inventory that is Nonproduct Output	ϕ	M C E O
6. Quantity Produced on Site	ϕ	M C E O
7. Quantity Brought on Site	7.95	M C E O
7.1 Quantity of No. 7. (above) that is Brought on Site as Recycled Substance	ϕ	M C E O
8. Quantity Recycled Out-of-Process on Site and Used on Site	ϕ	M C E O

**Outputs**

	Quantity (pounds)	Basis of Estimate (circle one)
9. Quantity Consumed on Site (chemically reacted in process)	ϕ	M C E O
10. Quantity Shipped off Site as (or in) Product	ϕ	M C E O
11. Ending Inventory	7.80	M C E O
11.1 Quantity of Ending Inventory that is Nonproduct Output	7.80	M C E O
12. Total Nonproduct Output (NPO) Generated	7.95	M T

**Other:**

	Quantity (pounds)	Basis of Estimate (circle one)
13. Quantity Destroyed through On-Site Treatment		M C E O
14. Quantity Destroyed through On-Site Energy Recovery		M C E O

25. Have any reductions in the use of the substance or generation of the substance as nonproduct output (NPO) occurred during 1995 due to discontinuance of operations?

☐ Yes ☐ No If "Yes," fill in below:

Quantity of Substance Reduced (pounds) (1994 to 1995)	Basis of Estimate
Quantity of substance reduced (1994 to 1995) due to discontinuance of operations, including operations transferred to or undertaken by another facility	M C E O

# POLLUTION PREVENTION ACTIVITIES

N/A

For the purpose of this Section and Sections C and D of this Report, pollution prevention means: the reduction or elimination of either the use of the substance or the generation of the substance as nonproduct output, prior to treatment, storage, out-of-process recycling or disposal. Pollution prevention is not any type of treatment, out-of-process recycling, incineration, or the transfer of releases to different media.

25. Has any pollution prevention method been employed to reduce the quantity of this substance during <sup>1994</sup>1995 relative to 1994 <sup>1995</sup>1995 levels? ☐ Yes ☐ No If "Yes," fill in the table below: *Provide quantity of substance reduced (lbs) 1995 to 1996*

POLLUTION PREVENTION METHODOLOGY (Complete all appropriate sections)	Quantity of Substance Reduced (pounds) (1994 to 1995)	Basis of Estimate												
25.1 Material-Related Change (changes in the amount of substance used due to substitution of other non-listed substance)		M C E O												
<p>Name and Quantity of Substance</p> <table> <tr> <th>CAS NUMBER</th><th>SUBSTANCE</th><th>QUANTITY (lbs)</th></tr> <tr> <td>a)</td><td></td><td></td></tr> <tr> <td>b)</td><td></td><td></td></tr> <tr> <td>c)</td><td></td><td></td></tr> </table>			CAS NUMBER	SUBSTANCE	QUANTITY (lbs)	a)			b)			c)		
CAS NUMBER	SUBSTANCE	QUANTITY (lbs)												
a)														
b)														
c)														

\* Facilities in SIC codes 25, 26, 30, 33 and 34 STOP HERE. Do not finish this page! Go on to Sections C and D. Facilities in all other SIC codes complete this page.

	Quantity of Substance Reduced (pounds) (1994 to 1995)	Basis of Estimate
25.2 Reformulation or Redesign of Product (resulting in the reduction of substance generated)		M C E O
25.3 Process or Procedure Modifications (using existing equipment to reduce substance generated)		M C E O
25.4 Equipment or Technology Modifications (using new equipment or technology to reduce substance generated)		M C E O
25.5 Improved Operations (due to housekeeping, training, material handling or inventory control to reduce substance generated)		M C E O
25.6 Miscellaneous (Describe: _____)		M C E O

27. Does your facility anticipate reducing the use or generation of the substance as nonproduct output in the future due to pollution prevention? ☐ Yes ☐ No If "Yes," indicate your projections in the table below:

PROJECTION	YEAR	
	1997	2000
Reduction in the quantity of the substance used or generated as NPO per year due to pollution prevention assuming production is constant (pounds)		

**New Jersey Form S**

**ETTP LEAD METAL**

**5.0 Starting Inventory of Substance on Site:** For purposes of the production unit covered by this report, the starting inventory is assumed to be ZERO; i.e., lead in offsite waste incinerated during the year is assumed to have been received during the same year. The Form R further addresses activities involving lead that are unrelated to the reportable lead in offsite waste.

**5.1 Starting Inventory that is NPO: Zero**

**6. Quantity Produced on Site: Zero**

**7. Quantity Brought on Site:** 7.95 lbs of lead metal that was in waste treated at the incinerator was from offsite.

**7.1 Quantity Brought on Site as Recycled Substance: Zero**

**8. Quantity Recycled Out-of-Process on Site and Used on Site: Zero**

**9. Quantity Consumed on Site: Zero**

**10. Quantity Shipped off Site as (or in) Product: Zero**

**11. Ending Inventory:** 7.80 lbs in ash and sludge (0.10 lbs lost to air, and 0.05 lost to water)

**11.1 Quantity of Ending Inventory that is Nonproduct Output: 7.80 lbs**

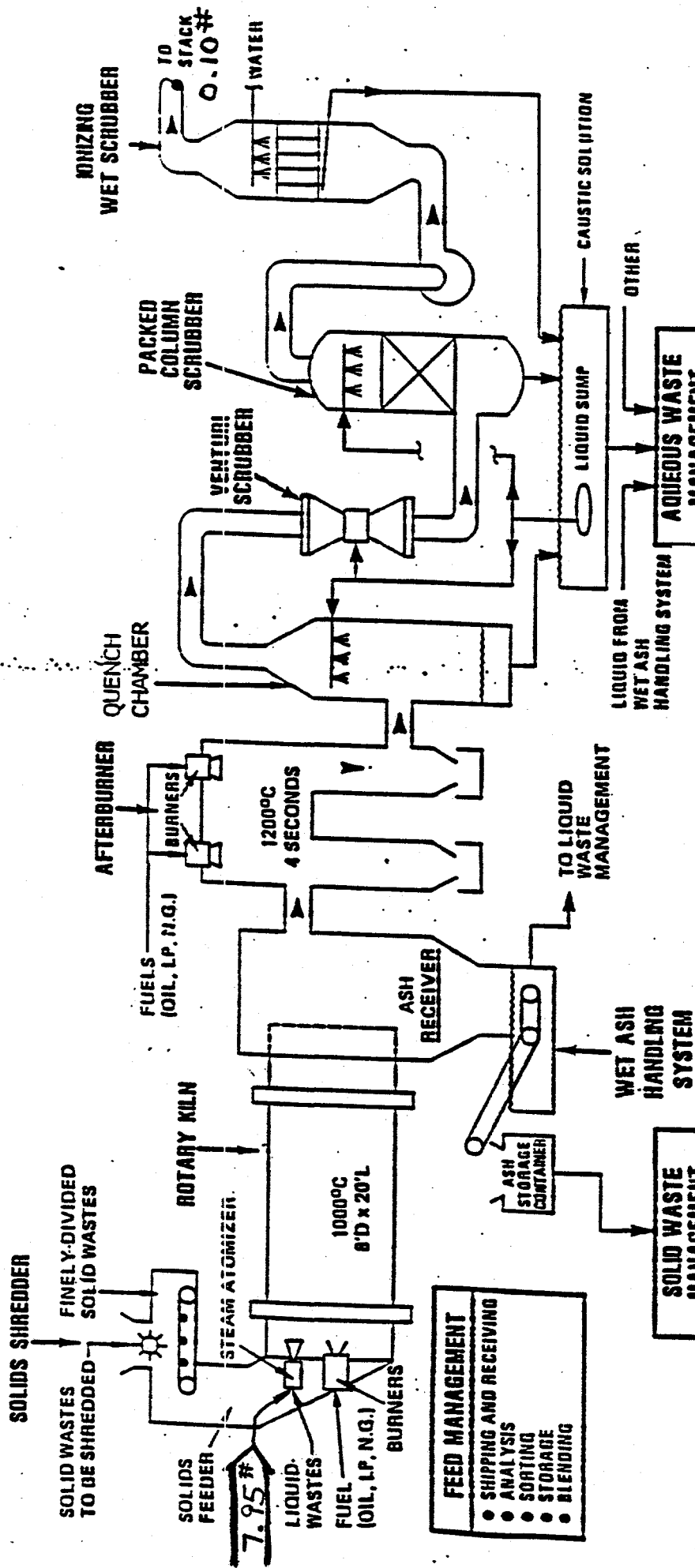
**12. Total Nonproduct Output Generated:** All 7.95 lbs considered to be nonproduct output, although there are problems applying the nonproduct definition [generated prior to treatment] to this situation. The lead metal in waste has passed through the incinerator, and the mass balance (attached) illustrates the process.

**NOTE:** The remaining sections of the New Jersey reporting form are Not Applicable to waste incineration and other waste treatment activities, according to the introduction to Item #26.

# TSCA INCINERATOR

LEAD MASS BALANCE

## INCINERATOR



FEED MANAGEMENT
• SHIPPING AND RECEIVING
• ANALYSIS
• SORTING
• STORAGE
• BLENDING

SOLID WASTE MANAGEMENT
• SAMPLING
• ANALYSIS
• STORAGE
• FUTURE DELISTING

6.60 #

AQUEOUS WASTE MANAGEMENT
• ANALYSIS
• CARBON ADSORPTION
• NEUTRALIZATION
• SETTLING
• DISCHARGE

1.25 #

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## **APPENDIX B**

### **Data Package for Chromium**



## **TURA Report Cover Sheet**

### **Section 4**

#### **Production Unit**

#01

#### **Process Description:**

Only identified one process as ORNL. Welding at ORNL is conducted by Plant and Equipment Division and MK Ferguson. Maintenance (ie repairing a broken pipe), construction, and fabrication captures the welding activities at ORNL. The welding rods contain ~17%-22% chromium. ORNL otherwise used ~110 pounds (~500 lbs of rods X 0.22 = 110 lbs) of chromium. For purposes of this report only accounted for chromium used for welding activities in CY97.

#### **Product Description:**

Welded metal by Plant and Equipment Division and MK Ferguson. Maintenance (ie repairing a broken pipe), construction, and fabrication captures the welding activities at ORNL.

#### **Unit of Product:**

Pounds of chromium used via a welding rod in a calender year

#### **Production Process Step Information:**

Welding CC-09

#### **Chemical:**

Chromium Metal  
CAS No. 007440473

## **TURA Report - Form S**

### **1.1 CAS No.**

007440473

### **Chemical Identification**

Chromium

#### **1.2a**

0

#### **1.2b**

0

#### **1.2c**

Only identified one process as ORNL. Welding at ORNL is conducted by Plant and Equipment Division and MK Ferguson. Maintenance (ie repairing a broken pipe), construction, and fabrication captures the welding activities at ORNL. The welding rods contain ~17%-22% chromium. ORNL otherwise used ~110 pounds (~500 lbs of rods X 0.22 = 110 lbs) of chromium. For purposes of this report only accounted for chromium used for welding activities in CY97.

#### **1.2d**

Chromium to air from welding activities

HAP emission factors for Welding Operations indicates that (electrode type = E316) 5.22 E-1 lb Cr/ 1000 lb electrode.

$(5.22\text{E-1 lb Cr/1000 lb electrode})(500 \text{ lb electrode}) = 0.261 \text{ lbs or } \sim 1 \text{ lb}$

### **1.3 Optional Question**

109 lbs of chromium was welded to the metal.

### **1.4 Did anything non-routine occur...**

No

**2.1 Is the chemical used to treat waste or control pollution**

No

**Section 3 Production Unit #01**

**3.1 Base Year**

Have never exceeded a reporting threshold for chromium.

**3.2 Quantity of Chemical Code**

A (0- 5000 lbs) Otherwise used ~110 lbs of chromium.

**3.4 Byproduct Reduction Index**

$$BRI = 100 * A-B/A$$

A = Byproduct quantity in the base year/# of units of product produced in the base year

B = Byproduct quantity in the reporting year/# of units of product produced in the reporting year

BRI = 0 (never exceeded a threshold)

**3.5 Emission Reduction Index**

$$ERI = 100 * A-B/A$$

A = Emission quantity in the base year/# of units of product produced in the base year

B = Emission quantity in the reporting year/# of units of product produced in the reporting year

ERI = 0 (never exceeded a reporting threshold)

**SECTION B. FACILITY-LEVEL SUBSTANCE-SPECIFIC INFORMATION**

Submit one complete Section B for each reportable substance (listed in Appendices B and C of the instructions) manufactured, processed, or otherwise used in excess of 10,000 pounds in 1995.

ORNL		1.1 CAS No. (Category No.)  007440473
		1.2 RTK Substance No.
1.3	Substance Name (Category Name)	
2. ACTIVITIES AND USES OF THE SUBSTANCE AT THE FACILITY (Check all that apply.)		
2.1	Manufacture the substance: a. <input type="checkbox"/> Produce b. <input type="checkbox"/> Import	If produce or import: c. <input type="checkbox"/> For on-site use/processing e. <input type="checkbox"/> As a byproduct d. <input type="checkbox"/> For sale/distribution f. <input type="checkbox"/> As an impurity
2.2	Process the substance: a. <input type="checkbox"/> As a reactant b. <input type="checkbox"/> As a formulation component c. <input type="checkbox"/> As an article component d. <input type="checkbox"/> Repackaging	
2.3	Otherwise use the substance: a. <input type="checkbox"/> As a chemical processing aid b. <input type="checkbox"/> As a manufacturing aid c. <input type="checkbox"/> Ancillary or other use	
3.1	Principal Method of Storage:	
3.2	Frequency of Transfer from Storage: _____ times per _____	
3.3	Methods of Transfer:	

**INVENTORY AND THROUGHPUT INFORMATION**

Inventory:

	Quantity (pounds)	Basis of Estimate (circle one)
4. Maximum Daily Inventory of the Substance		M C E O

Inputs

	Quantity	Basis of Estimate
5. Starting Inventory of Substance	~110 lbs	M C E O
5.1 Quantity of Starting Inventory that is Nonproduct Output	~1 lb	M C E O
6. Quantity Produced on Site	0	M C E O
7. Quantity Brought on Site	110 lbs	M C E O
7.1 Quantity of No. 7. (above) that is Brought on Site as Recycled Substance	0	M C E O
8. Quantity Recycled Out-of-Process on Site and Used on Site	0	M C E O

Outputs

	Quantity (pounds)	Basis of Estimate (circle one)
9. Quantity Consumed on Site (chemically reacted in process)	~1 lb	M C E O
10. Quantity Shipped off Site as (or in) Product	0	M C E O
11. Ending Inventory	~109 lbs	M C E O
11.1 Quantity of Ending Inventory that is Nonproduct Output	0	M C E O
12. Total Nonproduct Output (NPO) Generated	~1 lb	M T

Other:

	Quantity (pounds)	Basis of Estimate (circle one)
13. Quantity Destroyed through On-Site Treatment		M C E O
14. Quantity Destroyed through On-Site Energy Recovery		M C E O

25. Have any reductions in the use of the substance or generation of the substance as nonproduct output (NPO) occurred during 1995 due to discontinuance of operations?

☐ Yes ☐ No If "Yes," fill in below:

Quantity of Substance Reduced (pounds) (1994 to 1995)	Basis of Estimate
Quantity of substance reduced (1994 to 1995) due to discontinuance of operations, including operations transferred to or undertaken by another facility	M C E O

### POLLUTION PREVENTION ACTIVITIES

For the purpose of this Section and Sections C and D of this Report, pollution prevention means: the reduction or elimination of either the use of the substance or the generation of the substance as nonproduct output, prior to treatment, storage, out-of-process recycling or disposal. Pollution prevention is not any type of treatment, out-of-process recycling, incineration, or the transfer of releases to different media.

25. Has any pollution prevention method been employed to reduce the quantity of this substance during 1995 relative to 1994 1995 levels? ☐ Yes ☒ No If "Yes," fill in the table below: *Provide quantity of substance reduced (lbs) 1995 to 1996*

POLLUTION PREVENTION METHODOLOGY (Complete all appropriate sections)		Quantity of Substance Reduced (pounds) (1994 to 1995)	Basis of Estimate												
25.1	Material-Related Change (changes in the amount of substance used due to substitution of other non-listed substance)		M C E O												
Name and Quantity of Substitute Substance <table border="1"> <thead> <tr> <th>CAS NUMBER</th> <th>SUBSTANCE</th> <th>QUANTITY (lbs)</th> </tr> </thead> <tbody> <tr> <td>a)</td> <td></td> <td></td> </tr> <tr> <td>b)</td> <td></td> <td></td> </tr> <tr> <td>c)</td> <td></td> <td></td> </tr> </tbody> </table>				CAS NUMBER	SUBSTANCE	QUANTITY (lbs)	a)			b)			c)		
CAS NUMBER	SUBSTANCE	QUANTITY (lbs)													
a)															
b)															
c)															

\* Facilities in SIC codes 26, 28, 30, 33 and 34 **STOP HERE.** Do not finish this page! Go on to Sections C and D. Facilities in all other SIC codes complete this page.

	Quantity of Substance Reduced (pounds) (1994 to 1995)	Basis of Estimate
25.2 Reformulation or Redesign of Product (resulting in the reduction of substance generated)		M C E O
25.3 Process or Procedure Modifications (using existing equipment to reduce substance generated)		M C E O
25.4 Equipment or Technology Modifications (using new equipment or technology to reduce substance generated)		M C E O
25.5 Improved Operations (due to housekeeping, training, material handling or inventory control to reduce substance generated)		M C E O
25.6 Miscellaneous (Describe: _____)		M C E O

27. Does your facility anticipate reducing the use or generation of the substance as nonproduct output in the future due to pollution prevention? ☐ Yes ☒ No If "Yes," indicate your projections in the table below:

PROJECTION	YEAR	
	1997	2000
Reduction in the quantity of the substance used or generated as NPO per year due to pollution prevention assuming production is constant (pounds)		

## RELEASE &amp; POLLUTION PREVENTION REPORT FOR 1995

\*\*\* ONLY FACILITIES IN SIC CODES 26, 28, 30, 33 OR 34 COMPLETE THIS SECTION. \*\*\*

### SECTION C. FACILITY-LEVEL SUBSTANCE-SPECIFIC POLLUTION PREVENTION PROGRESS

Submit one complete Section C for each reportable substance (listed in Appendices B and C of the instructions) manufactured, processed or otherwise used in excess of 10,000 pounds in 1995. Do not complete this Section for substances noted with an asterisk (\*) or a check mark (✓) in Appendices B and C.

FACILITY LOCATION INFORMATION	1.1 CAS No. (Category No.)  007440473
	1.2 Substance Name (Category Name)  Chromium Metal

- 2.1 Are the facility-level, substance-specific goals stated in Section B of your Pollution Prevention Plan Summary of 1993 based on constant production?

☐ Yes ☐ No

- 2.2 If you answered "NO" to Question 2.1, restate your facility-level, substance-specific Use and NPO goals for this substance as if production were constant (see instructions). If you answered "YES," or if you already restated your goals under this question last year, leave this question blank.

Use	NPO
b.	b.
%	%

3. Production Ratio or Activity Index is in Current Form R, Section 8.19  
NA

4. Percent Reduction NA

Use	NPO
%	%

5. Check here if you classified any outputs for this substance as co-product on Section B, Question 2 of your 1993 Pollution Prevention Plan Summary. If you check this box, call the Office of Pollution Prevention at (808) 777-0518 for special instructions on how to report the effects of co-product sales on your pollution prevention reduction numbers.

☐

6. Note the identification numbers of any production processes that your facility discontinued or sent off site in 1995. These numbers should match those identified in your Pollution Prevention Plan and Section C of your Pollution Prevention Plan Summary. If any of the listed processes involved more than one reportable substance, identify the process ID only once on a single Section C. If no production processes were discontinued or sent off site in 1995, leave this blank.

7. CERTIFICATION OF OWNER OR OPERATOR (Required only on one Section C.) — I certify under penalty of law that the information submitted in Sections C and D of this report is true, accurate and complete to the best of my knowledge.

Signature \_\_\_\_\_

Date \_\_\_\_\_

Phone No. ( ) \_\_\_\_\_

## **New Jersey Form S**

### **5.0 Starting Inventory of Substance on Site:**

Only identified one process as ORNL. Welding at ORNL is conducted by Plant and Equipment Division and MK Ferguson. Maintenance (ie repairing a broken pipe), construction, and fabrication captures the welding activities at ORNL. The welding rods contain ~17%-22% chromium. ORNL otherwise used ~110 pounds (~500 lbs of rods X 0.22 = 110 lbs) of chromium. For purposes of this report only accounted for chromium used for welding activities in CY97. Did not inventory the chromium that is a component of stainless steel. To actually inventory all of the chromium on site (structural steel) would be an impossible task.

#### **5.1 Starting Inventory that is NPO**

The only amount of starting inventory that is Nonproduct Output is the chromium fumes from welding activities. HAP emission factors for Welding Operations indicates that (electrode type = E316) 5.22 E-1 lb Cr/ 1000 lb electrode.

$$(5.22\text{E-}1 \text{ lb Cr}/1000 \text{ lb electrode})(500 \text{ lb electrode}) = 0.261 \text{ lbs or } \sim 1 \text{ lb}$$

### **6.0 Quantity Produced on Site**

No chromium was produced on Site

### **7.0 Quantity brought on Site**

Entire amount of chromium was brought on site (110 lbs).

#### **7.1 Quantity of No. 7 that was brought on Site as Recycled Substance**

None.

Table 12.19-2. HAZARDOUS AIR POLLUTANT (HAP) EMISSION FACTORS FOR WELDING OPERATIONS<sup>a</sup>

Welding Process	Electrode Type (With Last 2 Digits Of SCC)	HAP Emission Factor (10 <sup>-1</sup> g/kg [10 <sup>-1</sup> /10 <sup>3</sup> lb] Of Electrode Consumed) <sup>b</sup>					EMISSION FACTOR RATING
		Cr	Cr(VI)	Co	Mn	Ni	
SMAW <sup>c</sup> (SCC 3-09-051)	14Mn-4Cr (-04)	13.9	ND	ND	232	17.1	ND
	E11018 (-08) <sup>h</sup>	ND	ND	ND	13.8	ND	ND
	E308 (-12) <sup>j</sup>	3.93	3.59	0.01	2.52	0.43	ND
	E310 (-16) <sup>k</sup>	25.3	18.8	ND	22.0	1.96	0.24
	E316 (-20) <sup>m</sup>	5.22	3.32	ND	5.44	0.55	ND
	E410 (-24) <sup>n</sup>	ND	ND	ND	6.85	0.14	ND
	E6010 (-28)	0.03	0.01	ND	9.91	0.04	ND
	E6011 (-32)	0.05	ND	0.01	9.98	0.05	ND
	E6012 (-36)	ND	ND	ND	ND	ND	ND
	E6013 (-40)	0.04	ND	< 0.01	9.45	0.02	ND
	E7018 (-44)	0.06	ND	< 0.01	10.3	0.02	ND
	E7024 (-48)	0.01	ND	ND	6.29	ND	ND
	E7028 (-52)	0.13	ND	ND	8.4612	ND	1.62
	E8018 (-56) <sup>p</sup>	0.17	ND	ND	0.3	0.51	ND
	E9016 (-60)	ND	ND	ND	ND	ND	ND
	E9018 (-64) <sup>q</sup>	2.12	ND	ND	7.83	0.13	ND
	ECoCr (-68)	ND	ND	ND	ND	ND	ND
	ENi-CI (-72)	ND	ND	ND	0.39	8.90	ND
	ENiCrMo (-76) <sup>r</sup>	4.20	ND	ND	0.43	2.47	ND
	ENi-Cu-2 (-80) <sup>s</sup>	ND	ND	ND	2.12	4.23	ND
GMAW <sup>d,e</sup> (SCC 3-09-052)	E308 (-12) <sup>t</sup>	5.24	ND	< 0.01	3.46	1.84	ND
	E70S (-54) <sup>u</sup>	0.01	ND	< 0.01	3.18	0.01	ND
	ER1260 (-10)	0.04	ND	ND	ND	ND	ND
	ER5154 (-26)	0.10	ND	ND	0.34	ND	ND
	ER316 (-20) <sup>v</sup>	5.28	0.10	ND	2.45	2.26	ND
	ERNiCrMo (-76) <sup>w</sup>	3.53	ND	ND	0.70	12.5	ND
	ERNiCu (-80) <sup>x</sup>	< 0.01	ND	ND	0.22	4.51	ND

$$5.22 \times 10^{-1} \text{ lb Cr} = 0.00052 \text{ lb Cr} \times 500 \text{ lb electrode} = 0.261 \text{ lb}$$

1000 lb electrode      1 lb electrode

**8.0 Quantity recycled Out-of-Process on Site and used on Site**

None.

**9.0 Quantity Consumed on Site**

~ 1 lb (see 5.0)

**10.0 Quantity Shipped off Site as Product**

None.

**11.0 Ending Inventory**

Starting inventory 110 lbs - 1 lb to air = 109 lbs

**11.1 Quantity of Ending Inventory that is NPO**

None.

**12.0 Total NPO Generated**

1 lb (see 5.0)

**26.0 Has any Pollution Prevention method been employed ...**

No.

**27.0 Does your facility anticipate reducing NPO**

No.

**Section C**

**1.1 CAS No.**

007440473

**1.2 Substance Name**

Chromium

**3. Production Ratio**

Have never reported on the substance so cannot calculate a production ratio.

**4. Percent Reduction**

Have never reported on the substance so cannot calculate a percent reduction.

**INTENTIONALLY BLANK**

**TURA REPORT - COVER SHEET***Toxics Use Reduction Act - Form S Cover Sheet***Section 1: General Information**1.1 ATTACH MAILING LABEL with facility name  
address & DEP Facility Identification NumberATTACH CORRECTED MAILING LABEL or enter  
facility, name & address1.2 Are you making a trade secret claim for any of the information submitted in this COVER SHEET and/or Form S(s)? YES X NO1.3 If YES, attach a statement substantiating the claim. Is this copy: X Sanitized    Unsanitized1.4 This report is being filed for reporting year: 1997   **Section 2: Certification Statement**

2.0 This CERTIFICATION STATEMENT should be signed after all the forms have been completed.

I hereby certify that I have reviewed this and all attached documents and that, to the best of my knowledge and belief, the submitted information is true and complete and that the amounts and values in these documents are accurate based on measurements and/or reasonable estimates using data available to the preparers of these documents. I am aware that there are significant penalties for willful or intentional submission of false or incomplete information.

Authorized Signature

N/A

Print Name

Position/Title

Date

**Section 3: Chemicals Previously Reported That Are Not Reportable This Year**

3.0 OPTIONAL QUESTION. In this section, you may provide information on any chemical reported last year that is not subject to reporting this year. If you substituted a non-listed chemical for a TURA chemical, you may identify the substitution, as well.

The codes to explain why the chemical is not reportable are: [1] Chemical Below Threshold But > 0 [2] No Chemical Usage in Reporting Year [3] Chemical Substitution [4] Chemical Eliminated (No Substitution) [5] Decline in Business [6] Other (Explain below in the additional comments section). Enter all the codes that apply.

3.1

CAS # of Chemical Not Reportable (if applicable)

Chemical Name

Explanation of Why the Chemical Is Not Reportable. (Enter Code):            

CAS # of Chemical Substituted for TURA Chemical

Chemical Name

3.2

CAS # of Chemical Not Reportable (if applicable)

Chemical Name

Explanation of Why the Chemical Is Not Reportable. (Enter Code):            

CAS # of Chemical Substituted for TURA Chemical

Chemical Name

Additional Comments:

Y-12 PLANT  
FACILITY NAME

TOWN or TURA IL#

1997  
Reporting Year

Page 2 of 5

## FORM S COVER SHEET (continued)

## Section 4: Facility-Wide Listing of Production Units

A PRODUCTION UNIT is best thought of as the combination of the process (or activities) used to produce a product or service and the product or service. In this block, please identify the PRODUCTION UNITS at the facility, then use the production unit number to report on chemical usage in the attached Form S. If there is a substantial change in a PRODUCTION UNIT from one reporting year to the next, the PRODUCTION UNIT must be given a new, unique number.

Production  
Unit #: 01This Production Unit (Process/Product Combination) is: \_\_\_\_\_ The Same As Reported Last Year ☒ New

**Describe the Process:** Building 9201-5N has two primary operations; (1) the machining operations in which a cast, forged, or formed shape is machined, e.g., aluminum alloys, magnesium alloys, bronze...and (2) plating operations, i.e., plating various metals onto substrates. For the purpose of this report our attention is focused on operations which includes electroplating finishing and metal cleaning. Major equipment includes tanks, and rectifiers. The current process simply involves taking a given part, zinc plate it and dipping it into a chromate solution (~35% sodium bichromate, and ~55% formic acid), rinse with de-ionized water and air dry. The solution and rinsate are collected in appropriate drums and is sent to waste management for treatment/disposal.

**Describe the Product:** The zinc plated and chromate conversion coating of high strength steel parts.

Enter the four-digit SIC Code(s) that best describe(s) the product:

3 4 7 1

Describe the Unit of Product: Number of plated parts.

(Please specify if the Unit of Product has been changed since the previous reporting year.)

## PRODUCTION PROCESS STEP INFORMATION FOR THIS PRODUCTION UNIT

Enter the production process code(s) to identify the process step(s) that involves a TUR-reportable chemical(s) as an input, output or throughput. (See the reporting guidance document for the list of production process codes and instructions on when a given code needs to be listed.)

1. A A 1 8 2. 3. 4.

5. 6. 7. 8.

List below, the TURA-reportable chemicals associated with the production unit. If a chemical is associated with ALL the process steps identified above, check the ALL block. If the chemical is associated with some but not all of the process steps, put the relevant code(s) (from above) next to the chemical

Chemical(s)

Production Process

Sodium Bichromate  
Chemical Name

X ALL

010588019  
CAS#Carboxylic Acid  
Chemical Name

X ALL

000064186  
CAS#

Chemical Name

ALL

CAS#

4-12 PLANT

FACILITY NAME

TOWN or TURA ID#

1997

Page 3 of 5

Reporting Year

## FORM S COVER SHEET (Continuation Page, for use, if necessary)

## Section 4: Facility-Wide Listing of Production Units

Production  
Unit #: N/A

## PRODUCTION PROCESS STEP INFORMATION FOR THIS PRODUCTION UNIT

Enter the production process code(s) to identify the process step(s) that involves a TUR-reportable chemical(s) as an input, output or throughput. (See the reporting guidance document for the list of production process codes and instructions on when a given code needs to be listed.)

1.      2.      3.      4.     5.      6.      7.      8.     

List below, the TURA-reportable chemicals associated with the production unit. If a chemical is associated with **ALL** the process steps identified above, check the **ALL** block. If the chemical is associated with some but not all of the process steps, put the relevant code(s) (from above) next to the chemical.

Chemical(s)

Production Process(es)

Chemical Name

ALL     

CAS#

Chemical Name

ALL     

CAS#

Chemical Name

ALL     

CAS#

Chemical Name

ALL     

CAS#

Chemical Name

ALL     

CAS#

Chemical Name

ALL     

CAS#

Facility Name: <u>Y-12 PLANT</u>	Facility ID#
Chemical: <u>CHROMIUM</u>	Reporting Year: <u>1997</u>

## Massachusetts Department of Environmental Protection

**TURA REPORT - FORM S***Toxics Use Reduction Act - Chemical Usage Facility-Wide & by Production Units**Section 1: Facility-Wide Usage of Listed Chemical*

1.1 N090 Chromium Compounds  
 Chemical Abstract Service (CAS) Number (if applicable) Chemical Identification (from Form R)

1.2 Facility-Wide Usage of Chemical Identified in 1.1 above. Enter total amount (in POUNDS) for each applicable category.  
 NOTE: Byproduct (item 1.2d) generally means all wastes containing the listed chemical before the waste is treated or recycled. Read the instructions carefully, however, before completing this section.

1.2a Manufactured: 0 1.2d Generated as Byproduct: 29.57

1.2b Processed: 0 1.2e Shipped in or as Product: 0.13

1.2c Otherwise Used: 30

1.3 OPTIONAL QUESTION. When the amounts reported in 1.2a, 1.2b, and 1.2c are added together, the sum will -- in many cases -- equal the sum of 1.2d and 1.2e. In other words, the left and right columns will often form a "materials balance." If the two columns are not in approximate balance, you may use this block to explain why. Mark all the reasons that apply, or indicate the number of pounds in the appropriate block below. (i.e.: 4,000 Chemical was held in inventory).

       Chemical was recycled on site.        Chemical was consumed or transformed.

       Chemical was held in inventory. X Chemical is a compound.

X Other (explain):

Historically to present this chemical has not exceeded the reportable threshold.

1.4 OPTIONAL QUESTION: Did anything non-routine occur at your facility during the reporting year which affected the data reported?  
       YES X NO If YES, you may use this space to comment:

*Section 2: Chemicals Used in Waste Treatment Units*

1 Is this chemical used to treat waste or control pollution?        YES X NO

If YES, enter the quantity of chemical code for the amount used to treat waste or control pollution:       

OPTIONAL -- You may enter the amount:       

*Section 3: TURA Report on Production Unit #: 01 (Enter # from the Form S Cover Sheet.)*

3.1 Base Year: 1997 3.4 Byproduct Reduction Index: 0

3.2 Quantity of Chemical Code: A 3.5 Emissions Reduction Index: 0

3.3 Toxics Use Reduction Techniques Code:       

If there has been a change from one reporting year to the current year in a (1) base year, and/or (2) estimating methods (that significantly alter previously reported data) for this PRODUCTION UNIT REPORT, describe the change:

Facility Name: <u>Y-12 PLANT</u>	Facility ID#
Chemical: <u>Chromium</u>	Reporting Year: <u>1997</u>

Section 3: TURA Report on Production Unit #: \_\_\_\_\_ (Enter # from the Form S Cover Sheet.)

3.1 Base Year: \_\_\_\_\_ 3.4 Byproduct Reduction Index: \_\_\_\_\_

3.2 Quantity of Chemical Code: [ ] 3.5 Emission Reduction Index: \_\_\_\_\_

3.3 Toxics Use Reduction Techniques Code: [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

If there has been a change from one reporting year to the current year in a (1) base year, and/or (2) estimating methods (that significantly alter previously reported data) for this PRODUCTION UNIT REPORT, describe the change:

TURA Report on Production Unit #: \_\_\_\_\_ (Enter # from the Form S Cover Sheet.)

3.1 Base Year: \_\_\_\_\_ 3.4 Byproduct Reduction Index: \_\_\_\_\_

3.2 Quantity of Chemical Code: [ ] 3.5 Emission Reduction Index: \_\_\_\_\_

3.3 Toxics Use Reduction Techniques Code: [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

If there has been a change from one reporting year to the current year in a (1) base year, and/or (2) estimating methods (that significantly alter previously reported data) for this PRODUCTION UNIT REPORT, describe the change:

TURA Report on Production Unit #: \_\_\_\_\_ (Enter # from the Form S Cover Sheet.)

3.1 Base Year: \_\_\_\_\_ 3.4 Byproduct Reduction Index: \_\_\_\_\_

3.2 Quantity of Chemical Code: [ ] 3.5 Emission Reduction Index: \_\_\_\_\_

3.3 Toxics Use Reduction Techniques Code: [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

If there has been a change from one reporting year to the current year in a (1) base year, and/or (2) estimating methods (that significantly alter previously reported data) for this PRODUCTION UNIT REPORT, describe the change:

TURA Report on Production Unit #: \_\_\_\_\_ (Enter # from the Form S Cover Sheet.)

3.1 Base Year: \_\_\_\_\_ 3.4 Byproduct Reduction Index: \_\_\_\_\_

3.2 Quantity of Chemical Code: [ ] 3.5 Emission Reduction Index: \_\_\_\_\_

3.3 Toxics Use Reduction Techniques Code: [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

If there has been a change from one reporting year to the current year in a (1) base year, and/or (2) estimating methods (that significantly alter previously reported data) for this PRODUCTION UNIT REPORT, describe the change:

Toxic Use Reduction Act (TURA) - *Form S* (Massachusetts)  
COVER SHEET

**Section 1: General Information**

1.1 Mailing Label \_\_\_\_\_

1.2 Making Trade Secret YES \_ NO **x**

1.3 **x** Sanitized \_\_\_\_ Unsanitized

1.4 This report is for reporting year **1997**

**Section 2: Certification Statement**

NA (not applicable)

**Section 3: Chemicals Previously Reported.....**

NA

**Section 4: Facility-Wide Listing of Production Units**

**Production Unit#: 01**

***Describe the Process:***

Building 9201-5N has two primary operations; (1) the machining operations in which a cast, forged, or formed shape is machined, e.g. aluminum alloys, magnesium alloys, bronze and (2) plating operations, i.e. plating various metals onto substrates. For the purpose of this report our attention is focused on operations which includes electroplating finishing and metal cleaning. Major equipment includes tanks, and rectifiers. The current process simply involves taking a given part, zinc plating and dipping it into a chromate solution (~35% sodium bichromate, ~55% formic acid), rinsed with de-ionized water and air dry. The solution and rinsate are collected in drums and sent to Waste Management for disposal. In summary, the process is plating of specified parts.

***Describe the Product:***

The product is the zinc plating and chromate conversion coating of high strength steel parts.

***Four digit SIC Code :*** 3471

***Describe the Unit of Product:***

Number of parts plated

***Production Process Step Information for this Production Unit:***

1.0 AA18

<u>Chemical</u>	<u>Production Process</u>	<u>CAS#</u>
Sodium Bichromate	x ALL	010588019
Carboxylic Acid (formic)	x ALL	000064186

## TURA REPORT - FORM S

### Section 1: Facility-Wide Usage of Listed Chemical

1.1 CAS#: N090                      Chemical Identification (from Form R): Chromium Compounds

1.2a. 0#    1.2b. 0#    1.2c. 30#    1.2d. 29.57#    1.2e. 0.13#

1.3 Optional: The sum of 1.2a, 1.2b, and 1.2c added together should equal the sum 1.2d, & 1.2e  
*Why?* The remaining estimated 0.3# was release to air as point source emissions.. Also note  
"chemical is a compound", and chemical is below reporting threshold but *greater than 0*.

1.4 Optional: *No*, for non-routine occurrence that may have affected the data reported.

### Section 2: Chemicals Used in Waste Treatment Units

2.1 Is chemical used to treat waste or control pollution? *No*

### Section 3: TURA Report on Production Unit# 01

3.1 Base Year: 1997                      3.2 Qty. Of Chemical Code: *A*

3.4 Byproduct Reduction Index: *0#*                      3.5 Emissions Reduction Index: *0#*

3.3 Toxic Use Reduction Techniques Code: *NA*

Not able to use the above (3.3) due to the specified chemical/compound has been used in the past to present however in small quantities i.e. below the TRI reportable threshold, therefore this section is not applicable.

rae

## RELEASE &amp; POLLUTION PREVENTION REPORT FOR 1995

**SECTION B. FACILITY-LEVEL SUBSTANCE-SPECIFIC INFORMATION**

Submit one complete Section B for each reportable substance (listed in Appendices B and C of the instructions) manufactured, processed, or otherwise used in excess of 10,000 pounds in 1995.

Y-12 PLANT		1.1 CAS No. (Category No.)
		N090
		1.2 RTK Substance No.
1.3	Substance Name (Category Name) Chromium Compounds	
2	ACTIVITIES AND USES OF THE SUBSTANCE AT THE FACILITY (Check all that apply.)	
2.1	Manufacture the substance:	a. <input type="checkbox"/> Produce b. <input type="checkbox"/> Import If produce or import: c. <input type="checkbox"/> For on-site use/processing d. <input type="checkbox"/> For sale/distribution e. <input type="checkbox"/> As a byproduct f. <input type="checkbox"/> As an impurity
2.2	Process the substance:	a. <input type="checkbox"/> As a reactant b. <input type="checkbox"/> As a formulation component c. <input type="checkbox"/> As an article component d. <input type="checkbox"/> Repackaging
2.3	Otherwise use the substance:	a. <input type="checkbox"/> As a chemical processing aid b. <input type="checkbox"/> As a manufacturing aid c. <input checked="" type="checkbox"/> Ancillary or other use
3.1	Principal Method of Storage:	
3.2	Frequency of Transfer from Storage: _____ times per _____	
3.3	Methods of Transfer:	

**INVENTORY AND THROUGHPUT INFORMATION**

Inventory:		Quantity (pounds)	Basis of Estimate (circle one)
4.	Maximum Daily Inventory of the Substance		M C E O
<b>Inputs</b>		Quantity	Basis of Estimate
5.	Starting Inventory of Substance	30	M C E (O)
5.1	Quantity of Starting Inventory that is Nonproduct Output	29.87	M C E (O)
6.	Quantity Produced on Site	0	M C E (O)
7.	Quantity Brought on Site	0	M C E (O)
7.1	Quantity of No. 7. (above) that is Brought on Site as Recycled Substance	0	M C E (O)
8.	Quantity Recycled Out-of-Process on Site and Used on Site	0	M C E (O)
<b>Outputs</b>		Quantity (pounds)	Basis of Estimate (circle one)
9.	Quantity Consumed on Site (chemically reacted in process)	0	M C E (O)
10.	Quantity Shipped off Site as (or in) Product	0.13	M C E (O)
11.	Ending Inventory	29.57	M C E (O)
11.1	Quantity of Ending Inventory that is Nonproduct Output	29.57	M C E (O)
12.	Total Nonproduct Output (NPO) Generated	0*	M (T)
Other: * see attached for details.		Quantity (pounds)	Basis of Estimate (circle one)
13.	Quantity Destroyed through On-Site Treatment		M C E O
14.	Quantity Destroyed through On-Site Energy Recovery		M C E O

25. Have any reductions in the use of the substance or generation of the substance as nonproduct output (NPO) occurred during 1995 due to discontinuance of operations?

☐ Yes ☒ No If "Yes," fill in below:

Quantity of Substance Reduced (pounds) (1994 to 1995)	Basis of Estimate
Quantity of substance reduced (1994 to 1995) due to discontinuance of operations, including operations transferred to or undertaken by another facility	M C E O

### POLLUTION PREVENTION ACTIVITIES

For the purpose of this Section and Sections C and D of this Report, pollution prevention means: the reduction or elimination of either the use of the substance or the generation of the substance as nonproduct output, prior to treatment, storage, out-of-process recycling or disposal. Pollution prevention is not any type of treatment, out-of-process recycling, incineration, or the transfer of releases to different media.

25. Has any pollution prevention method been employed to reduce the quantity of this substance during <sup>1996</sup>1995 relative to 1994 <sup>1995</sup>1995 levels? ☐ Yes ☒ No If "Yes," fill in the table below: *Provide quantity of substance reduced (lbs) 1995 to 1996*

POLLUTION PREVENTION METHODOLOGY (Complete all appropriate sections)	Quantity of Substance Reduced (pounds) (1994 to 1995)	Basis of Estimate
25.1 Material-Related Change (changes in the amount of substance used due to substitution of other non-listed substance)		M C E O
Name and Quantity of Substance Substance QUANTITY (lbs)		
a) N/A		
b)		
c)		

\* Facilities in SIC codes 26, 28, 30, 33 and 34 **STOP HERE**. Do not finish this page! Go on to Sections C and D. Facilities in all other SIC codes complete this page.

	Quantity of Substance Reduced (pounds) (1994 to 1995)	Basis of Estimate
25.2 Reformulation or Redesign of Product (resulting in the reduction of substance generated)		M C E O
25.3 Process or Procedure Modifications (using existing equipment to reduce substance generated)		M C E O
25.4 Equipment or Technology Modifications (using new equipment or technology to reduce substance generated)		M C E O
25.5 Improved Operations (due to housekeeping, training, material handling or inventory control to reduce substance generated)		M C E O
25.6 Miscellaneous (Describe: _____)		M C E O

27. Does your facility anticipate reducing the use or generation of the substance as nonproduct output in the future due to pollution prevention? ☐ Yes ☒ No If "Yes," indicate your projections in the table below:

PROJECTION	YEAR	
	1997	2000
Reduction in the quantity of the substance used or generated as NPO per year due to pollution prevention assuming production is constant (pounds)		

## RELEASE &amp; POLLUTION PREVENTION REPORT FOR 1995

ONLY FACILITIES IN SIC CODES 25, 28, 30, 33 OR 34 COMPLETE THIS SECTION.

### SECTION C. FACILITY-LEVEL SUBSTANCE-SPECIFIC POLLUTION PREVENTION PROGRESS

Submit one complete Section C for each reportable substance (listed in Appendices B and C of the instructions) manufactured, processed or otherwise used in excess of 10,000 pounds in 1995. Do not complete this Section for substances noted with an asterisk (\*) or a check mark (✓) in Appendices B and C.

4-12 PLANT  FACILITY LOCATION INFORMATION	1.1 CAS No. (Category No.)  N090
	1.2 Substance Name (Category Name)  Chromium Compounds

2.1 Are the facility-level, substance-specific goals stated in Section B of your Pollution Prevention Plan Summary of 1993 based on constant production? N/A ☐ Yes ☐ No

2.2 If you answered "NO" to Question 2.1, restate your facility-level, substance-specific Use and NPO goals for this substance as if production were constant (see instructions). If you answered "YES," or if you already restated your goals under this question last year, leave this question blank.

Use	NPO
b.	b.
%	%

3. Production Ratio or Activity Index is Current Film R, Section 8.109 = 1.0

4. Percent Reduction = 0%

Use	NPO
%	%

5. Check here if you classified any outputs for this substance as co-product on Section B, Question 2 of your 1993 Pollution Prevention Plan Summary. If you check this box, call the Office of Pollution Prevention at (808) 777-0518 for special instructions on how to report the effects of co-product sales on your pollution prevention reduction numbers. ☐

6. Note the identification numbers of any production processes that your facility discontinued or sent off site in 1995. These numbers should match those identified in your Pollution Prevention Plan and Section C of your Pollution Prevention Plan Summary. If any of the listed processes involved more than one reportable substance, identify the process ID only once on a single Section C. If no production processes were discontinued or sent off site in 1995, leave this blank.

7. CERTIFICATION OF OWNER OR OPERATOR (Required only on page Section C.) — I certify under penalty of law that the information submitted in Sections C and D of this report is true, accurate and complete to the best of my knowledge.

Signature \_\_\_\_\_ Date \_\_\_\_\_ Phone No. ( ) \_\_\_\_\_

7

# 1995 Release and Pollution Prevention Report

## Self Verification of Materials Accounting Data

(All Quantities Must Be Reported In Pounds)

NJEIN: \_\_\_\_\_ CAS#: N090 Substance: Chromium Compounds

### Inputs

5. Starting Inventory	30.0	9. Quantity Consumed (chemically altered)	0
6. Quantity Produced On Site	0	10. Quantity Shipped Off Site as (or in) Product	0.13
7. Quantity Brought On Site	0	11. Ending Inventory	29.57

13. Quantity Destroyed through  
On-Site Treatment14. Quantity Destroyed through  
On-Site Energy Recovery

15. Stack Air Emissions

16. Fugitive Air Emissions

17. Discharge to POTWs

18. Discharge to Surface Waters

19. Discharge to Groundwaters

20. On-Site Land Disposal

21. Other Off-Site Transfers

Sum of Inputs:	30.0	≈	Sum of Outputs:	30.0
----------------	------	---	-----------------	------

\*\* Stored on site and awaiting treatment = 29.57; also using the term destroyed is mis-leading i.e. not applicable to metals.

## New Jersey - Form S

### 5.0 *Starting Inventory of Substance on Site*

#### **Background/Inventory**

Based on the material selected and plant-wide inquiries, one process was identified and selected for this report. Building 9201-5N has two primary operations; (1) the machining operations in which a cast, forged, or formed shape is machined, e.g. aluminum alloys, magnesium alloys, bronze and (2) plating operations, i.e., plating various metals onto substrates. For the purpose of this report our attention is focused on operations which includes electroplating finishing and metal cleaning. Major equipment includes tanks, and rectifiers. The current process simply involves taking a given part, zinc plating and dipping it into a chromate solution (~35% sodium bichromate, and ~55% formic acid), rinsed with de-ionized water and air dry. The solution (macro drab) and rinsate are collected in drums and sent to waste management for treatment/disposal. In summary the **starting inventory = 30 lbs.**

#### 5.1 *Starting Inventory that is NPO*

The quantity of starting inventory that is Nonproduct Output is the spent solution and rinsate. It was determined that this amount = **~29.87 lb** in CY 1997.

Cr to air from plating process was determined to be = **~0.3 lb.**

The Plating Shop is located inside a building 9201-5N with no patent drains to the Storm Water System or Sanitary Sewers.

### 6.0 *Quantity Produced on Site*

No Cr was produced on site during in CY 1997.

### 7.0 *Quantity Brought on Site*

No Cr was brought on site for processing in 9201-5N in CY 1997.

#### 7.1 *Quantity of No. 7.0 that was brought on Site as Recycled Substance*

No Cr was brought on site as recycled substance for processing at 9201-5N in CY 1997.

### **8.0 Quantity Recycled Out-of-Process on Site and Used on Site**

No Cr was recycled out-of-process and used on site at 9201-5N in CY 1997. The Cr in waste (~29.57 lbs) was sent to WETF/WTF for treatment for disposal.

### **9.0 Quantity Consumed on Site (chemically reacted in process)**

No Cr was consumed on site in CY 1997, i.e. its molecular structure altered.

### **10.0 Quantity Shipped off Site as (or in) Product**

Estimated ~ 0.13 lbs was shipped in product.

### **11.0 Ending Inventory**

Due to the 0.3 lbs of Cr released to air and 0.13 lbs shipped in product in CY 1997 the remaining 29.57 lbs was on Site in waste, therefore ending inventory = 29.57 lbs.

#### **11.1 Quantity of Ending Inventory that is NPO**

Ending inventory that is NPO = 29.57 lb.

### **12.0 Total NPO Generated**

As stated in (11.1), the total NPO generated in CY 1997 at 9201-5N is = 29.57 lb. in waste. Using the "T" method for estimating Total NPO you will derive at =0; however in accordance to the intructions 29.57 lbs in waste was generated as NPO.

### **26.0 Has any Pollution Prevention method been employed to reduce the quantity....**

In CY 1997, at 9201-5N no pollution prevention was employed i.e. to reduce or eliminate of either the use of Chromium compounds or the generation of NPO, prior to treatment, storage, out-of-process recycling or disposal. Note: Pollution Prevention is not any type of treatment, out-of-process recycling, incineration, or the transfer to another media. Also due the low values implementing P2 is not cost effective for current operations.

### **27.0 Does your facility anticipate reducing the use or generation of the substance as NPO...**

No, only small quantities of NPO is generated and handled accordingly, i.e. funding is not a priority.

### ***Section C***

1.1 CAS No.: N090

1.2 Substance Name: Chromium Compounds

### **3.0 Production Ratio**

$PR = CY/PY$ ; therefore  $PR = 1.0$

### **4.0 Percent Reduction**

Using information for CY 96 vs CY 97, there were no percent reduction therefore = 0%

## SUMMARY

### Section B: *Inputs*

5.0 Starting Inventory = 30# for (9201-5N)

5.1 Starting inventory Nonproduct Output = 29.87#

6.0 Qty Produced on site = 0#

7.0 Qty Brought on site = 0#

7.1 & 8.0 Qty brought as recycle... = 0#

### *Outputs:*

9.0 Qty consumed on site chemically = 0#

10. Qty shipped off-site as product = 0.13#

11. Ending Inventory = 29.57#

11.1 Qty of ending inventory that is NPO = 29.57#

12. Total NPO generated = 29.57#; *however using "T" method = 0#*

Note: Basis of estimates for all = O ; for question 12 = T

rae (Y-12 Plant)

**INTENTIONALLY BLANK**

Facility Name:

ETTP

Facility ID#

Chemical:

Reporting Year

Massachusetts Department of Environmental Protection

## TURA REPORT - FORM S

Toxics Use Reduction Act - Chemical Usage Facility-Wide &amp; by Production Units

## Section 1: Facility-Wide Usage of Listed Chemical

1.1

007440473

Chemical Abstract Service (CAS) Number (if applicable)

Chromium Metal

Chemical Identification (from Form R)

- 1.2 Facility-Wide Usage of Chemical Identified in 1.1 above. Enter total amount (in POUNDS) for each applicable category.  
NOTE: Byproduct (item 1.2d) generally means all wastes containing the listed chemical before the waste is treated or recycled. Read the instructions carefully, however, before completing this section.

1.2a Manufactured:

0

1.2d Generated as Byproduct:

1.86 lbs.

1.2b Processed:

0

1.2e Shipped in or as Product:

0

1.2c Otherwise Used:

1.86 lbs

- 1.3 OPTIONAL QUESTION. When the amounts reported in 1.2a, 1.2b, and 1.2c are added together, the sum will -- in many cases -- equal the sum of 1.2d and 1.2e. In other words, the left and right columns will often form a "materials balance." If NA the two columns are not in approximate balance, you may use this block to explain why. Mark all the reasons that apply, or indicate the number of pounds in the appropriate block below. (i.e.: 4,000 Chemical was held in inventory).

\_\_\_\_\_ Chemical was recycled on site.

\_\_\_\_\_ Chemical was consumed or transformed.

\_\_\_\_\_ Chemical was held in inventory.

\_\_\_\_\_ Chemical is a compound.

\_\_\_\_\_ Other (explain):

- 1.4 OPTIONAL QUESTION: Did anything non-routine occur at your facility during the reporting year which affected the data reported? NA

\_\_\_\_\_ YES

\_\_\_\_\_ NO If YES, you may use this space to comment:

## Section 2: Chemicals Used in Waste Treatment Units

- 2.1 Is this chemical used to treat waste or control pollution? \_\_\_\_\_ YES X NO

If YES, enter the quantity of chemical code for the amount used to treat waste or control pollution: \_\_\_\_\_

OPTIONAL -- You may enter the amount: \_\_\_\_\_

Section 3: TURA Report on Production Unit#: 01 (Enter # from the Form S Cover Sheet.)

3.1 Base Year: \_\_\_\_\_

3.4 Byproduct Reduction Index: NA3.2 Quantity of Chemical Code: A3.5 Emissions Reduction Index: NA

3.3 Toxics Use Reduction Techniques Code:

--	--	--	--	--	--	--	--	--	--

If there has been a change from one reporting year to the current year in a (1) base year, and/or (2) estimating methods (that significantly alter previously reported data) for this PRODUCTION UNIT REPORT, describe the change:



**TURA Report – Form S**  
**ETTP – CHROMIUM**

- 1.1 CAS No. 007440473 Chemical Identification Chromium Metal
- 1.2a Manufactured 0
- 1.2b Processed 0
- 1.2c Otherwise Used 1.86 lbs was "otherwise used" according to the TRI-P2 definition, which includes chemicals in waste; this small amount of offsite waste had to be distinguished from the total amount of 111.56 lbs of chromium in waste that was treated at the incinerator in 1997.
- 1.2d Generated as Byproduct 1.86 lbs could be considered byproduct if one applies the statement that "All process outputs from a recycling operation are counted as byproduct." (Current definitions do not accomodate the incineration process very well.)
- 1.2e Shipped in or as Product 0. Chromium metal that passes through a waste treatment process cannot be considered both product and byproduct.
- 1.3 Optional Question Not Applicable
- 1.4 Optional Question Not Applicable
- 2.1 Is the chemical used to treat waste or control pollution?  
No, the chemical is contained in the waste as a minor constituent.
- 3.1 Base Year: 1997; not previously reported.
- 3.2 Quantity of Chemical Code: A (0 - 5000 lbs)
- 3.3 Toxics Use Reduction Code: None available for waste treatment
- 3.4 Byproduct Reduction Index:  
Not Applicable for 1997 because it is the base year; but given data from a prior year, BRI is not an appropriate calculation for metals in waste...there is no product produced.
- 3.5 Emission Reduction Index:  
As in 3.4 above, the ERI equation assumes that there is a production activity for the chemical being reported.

**Section 4. Facility-Wide Listing of Production Units****Production Unit:** 01**Process Description:**

The production unit is a DOE hazardous waste incinerator at ETTP. Its primary purpose is to chemically transform hazardous liquid wastes from past DOE operations in the Oak Ridge area and at a few out-of-state locations. Small amounts of metals are contained in the waste feed, and are removed by the air pollution control equipment at an efficiency of greater than 99% for most metals. The residual metals are contained in the aqueous wastewater, and the sludge, and the ash which is containerized for landfill disposal.

**Product Description:**

This is a waste management process aimed at hazardous waste destruction and size reduction; in the case of parent metals contained as a minor ingredient in waste, the process can only recontainerize the metals for some other means of disposal.

**Unit of Product:** Undefined; assumes there to be an end product for which the chromium was otherwise used; the chromium is a very minor constituent in the waste being incinerated, and if it were not for strict RCRA permitting requirements, there would be no data available for reporting.

**Production Process Step Information:**

None identified. Appendix H does not have codes that describe this process. In fact, the reporting instructions would exempt this entire waste production unit from Form S reporting; a report is being attempted in this pilot project to determine the suitability of the reporting forms.

**Chemical:** Chromium metal**CAS No:** 007440473

**SECTION B. FACILITY-LEVEL SUBSTANCE-SPECIFIC INFORMATION**

Submit one complete Section B for each reportable substance (listed in Appendices B and C of the instructions) manufactured, processed, or otherwise used in excess of 10,000 pounds in 1995.

ETTP		1.1 CAS No. (Category No.) <div style="text-align: center; font-size: 1.5em;">007440473</div>
		1.2 RTK Substance No.
1.3	Substance Name (Category Name) <div style="text-align: center; font-size: 1.5em;">CHROMIUM METAL</div>	
2. ACTIVITIES AND USES OF THE SUBSTANCE AT THE FACILITY (Check all that apply.)		
2.1	Manufacture the substance: a. <input type="checkbox"/> Produce b. <input type="checkbox"/> Import	If produce or import: c. <input type="checkbox"/> For on-site use/processing e. <input type="checkbox"/> As a byproduct d. <input type="checkbox"/> For sale/distribution f. <input type="checkbox"/> As an impurity
2.2	Process the substance: a. <input type="checkbox"/> As a reactant b. <input type="checkbox"/> As a formulation component c. <input type="checkbox"/> As an article component d. <input type="checkbox"/> Rec packaging	
2.3	Otherwise use the substance: a. <input type="checkbox"/> As a chemical processing aid b. <input type="checkbox"/> As a manufacturing aid c. <input type="checkbox"/> Ancillary or other use	
3.1	Principal Method of Storage:	
3.2	Frequency of Transfer from Storage: _____ times per _____	
3.3	Methods of Transfer:	

**INVENTORY AND THROUGHPUT INFORMATION****Inventory:**

	Quantity (pounds)	Basis of Estimate (circle one)
4. Maximum Daily Inventory of the Substance		M C E O

**Inputs**

	Quantity	Basis of Estimate
5. Starting Inventory of Substance	0	M C E O
5.1 Quantity of Starting Inventory that is Nonproduct Output	0	M C E O
6. Quantity Produced on Site	0	M C E O
7. Quantity Brought on Site	1.86	M C E O
7.1 Quantity of No. 7. (above) that is Brought on Site as Recycled Substance	0	M C E O
8. Quantity Recycled Cut-of-Process on Site and Used on Site	0	M C E O

**Outputs**

	Quantity (pounds)	Basis of Estimate (circle one)
9. Quantity Consumed on Site (chemically reacted in process)	0	M C E O
10. Quantity Shipped off Site as (or in) Product	0	M C E O
11. Ending Inventory	1.80	M C E O
11.1 Quantity of Ending Inventory that is Nonproduct Output	1.80	M C E O
12. Total Nonproduct Output (NPO) Generated	1.86	M T

**Other:**

	Quantity (pounds)	Basis of Estimate (circle one)
13. Quantity Destroyed through On-Site Treatment		M C E O
14. Quantity Destroyed through On-Site Energy Recovery		M C E O

25. Have any reductions in the use of the substance or generation of the substance as nonproduct output (NPO) occurred during 1995 due to discontinuance of operations?

☐ Yes ☐ No If "Yes," fill in below:

Quantity of Substance Reduced (pounds) (1994 to 1995)	Basis of Estimate
Quantity of substance reduced (1994 to 1995) due to discontinuance of operations, including operations transferred to or undertaken by another facility	M C E O

### POLLUTION PREVENTION ACTIVITIES

N/A

For the purpose of this Section and Sections C and D of this Report, pollution prevention means: the reduction or elimination of either the use of the substance or the generation of the substance as nonproduct output, prior to treatment, storage, out-of-process recycling or disposal. Pollution prevention is not any type of treatment, out-of-process recycling, incineration, or the transfer of releases to different media.

26. Has any pollution prevention method been employed to reduce the quantity of this substance during 1995 relative to 1994 levels? ☐ Yes ☐ No If "Yes," fill in the table below: <sup>1994 to 1995</sup> Provide quantity of substance reduced (lbs) 1995 to 1996

POLLUTION PREVENTION METHODOLOGY (Complete all appropriate sections)	Quantity of Substance Reduced (pounds) (1994 to 1995)	Basis of Estimate
23.1 Material-Related Change (changes in the amount of substance used due to substitution of other non-listed substance)		M C E O
Name and Quantity of Substance Substance <div style="display: flex; justify-content: space-between;"> <div>CAS NUMBER</div> <div>SUBSTANCE</div> <div>QUANTITY (lbs)</div> </div> <div style="display: flex;"> <div style="width: 5%;">a)</div> <div style="width: 40%; border-bottom: 1px solid black;"></div> <div style="width: 40%; border-bottom: 1px solid black;"></div> <div style="width: 15%; border-bottom: 1px solid black;"></div> </div> <div style="display: flex;"> <div style="width: 5%;">b)</div> <div style="width: 40%; border-bottom: 1px solid black;"></div> <div style="width: 40%; border-bottom: 1px solid black;"></div> <div style="width: 15%; border-bottom: 1px solid black;"></div> </div> <div style="display: flex;"> <div style="width: 5%;">c)</div> <div style="width: 40%; border-bottom: 1px solid black;"></div> <div style="width: 40%; border-bottom: 1px solid black;"></div> <div style="width: 15%; border-bottom: 1px solid black;"></div> </div>		

\* Facilities in SIC codes 25, 26, 30, 33 and 34 STOP HERE. Do not finish this page! Go on to Sections C and D. Facilities in all other SIC codes complete this page.

	Quantity of Substance Reduced (pounds) (1994 to 1995)	Basis of Estimate
23.2 Reformulation or Redesign of Product (resulting in the reduction of substance generated)		M C E O
23.3 Process or Procedure Modifications (using existing equipment to reduce substance generated)		M C E O
23.4 Equipment or Technology Modifications (using new equipment or technology to reduce substance generated)		M C E O
23.5 Improved Operations (due to housekeeping, training, material handling or inventory control to reduce substance generated)		M C E O
23.6 Miscellaneous (Describe: _____)		M C E O

27. Does your facility anticipate reducing the use or generation of the substance as nonproduct output in the future due to pollution prevention? ☐ Yes ☐ No If "Yes," indicate your projections in the table below:

PROJECTION	YEAR	
	1997	2000
Reduction in the quantity of the substance used or generated as NPO per year due to pollution prevention assuming production is constant (pounds)		

**New Jersey Form S**

**ETTP CHROMIUM METAL**

**5.0 Starting Inventory of Substance on Site:**

Zero. All offsite waste incinerated during the year is assumed to have been received during the same year. Although there may have been other chromium inventory onsite at the beginning of 1997, it was most likely exempt from TRI reporting as an ingredient in solid articles (extremely difficult to determine after-the-fact if any would have lost its article exemption during the year); there also may have been chromium metal in other waste management activities that are not nearly as quantifiable as that treated by incineration.

**5.1 Starting Inventory that is NPO: Zero.**

**6. Quantity Produced on Site: Zero**

**7. Quantity Brought on Site:** 1.86 lbs of chromium metal that was in waste treated at the incinerator was from offsite

**7.1 Quantity Brought on Site as Recycled Substance: Zero**

**8. Quantity Recycled Out-of-Process on Site and Used on Site: Zero**

**9. Quantity Consumed on Site: Zero**

**10. Quantity Shipped off Site as (or in) Product: Zero**

**11. Ending Inventory:** 1.80 lbs recovered in sludge, assumes 3 % lost to air/water emissions.

**11.1 Quantity of Ending Inventory that is Nonproduct Output: 1.80 lbs**

**12. Total Nonproduct Output Generated:** 1.86 lbs considered nonproduct output, although there are problems applying the nonproduct definition [generated prior to treatment] to this situation, and subsequent sections [Environmental Releases and Offsite Transfers, which are Form R entries] are more appropriate for tracking the waste ingredients.

**NOTE:** The remaining sections of the New Jersey reporting form are Not Applicable to incineration and other waste treatment activities, according to the introduction to Item #26.

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**Distribution**

W. Garvey, U.S. EPA

C. C. Hill

R. L. Johnson, Jr./ R. A. Evans

R. Kingrea

R. Martin, DOE-ORO

F. Perez

J. Powers, DOE-HQ

A. D. Saunders

G. G. Worley

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