

Aluminum, Copper, and Other Nonferrous Foundries Area Source NESHAP

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Source Category Background

- Foundries all melt metal ingot, scrap, alloys in furnaces and pour molten metal into molds to produce castings
- These 3 foundry source categories dominated by small plants and small businesses
- Contribution to metal HAP emissions is small
- Emissions reduced since 1990 Toxics Release Inventory (basis for listing) due to OSHA lead standards, State permitting requirements, and improved controls

Source Category Background

- Aluminum, copper & other nonferrous foundries use hundreds of metal alloys to make thousands of products
- Significant overlap in metals/alloys
- Copper alloys
 - Bronze (~88% Cu and ~12% Sn)
 - Brass (~67% Cu and ~33% Zn)

Number of Foundries

Table 1

	Aluminum	Copper	Other Nonferrous	Total
TRI 1990 listing basis	20	34	17	71
Total number of foundries* (2002 Census Data)	541	281	143	966

*These numbers represent our best estimates of the total number of nonferrous foundries, based on 2002 U.S. Census survey data.

1990 TRI Baseline

The 1990 TRI is important for several reasons:

- 1990 is the baseline year for the section 112(k) inventory of urban HAP that is the basis for listing all of the area source categories.
- The 1990 TRI was used to quantify the urban HAP emissions from these three area source categories; and consequently, the 1990 TRI is the basis for listing them for regulation under the area source program.

HAP Metal Emissions

- We used the TRI to present a comparison of emissions of the listed HAP on the same basis for 1990 and for later in 2005, as shown in Table 2.
- For comparison, we also did a query of the 2002 NEI for emissions of the listed HAP and summarized the results in Table 3.

Table 2

HAP Emissions from 2005 TRI

HAP metal	Emissions of the listed HAP (tpy) – number of facilities in parentheses			
	Aluminum Foundries (58)	Copper Foundries (43)	Other Nonferrous Foundries (31)	Total (132)
Be	0.0	--	--	0.0
Cd	0.0	--	--	0.0
Cr	--	--	1.3	1.3
Pb	0.26	6.7	1.2	8.2
Mn	0.05	0.006	--	0.06
Ni	0.3	0.36	3.5	4.2
Total	0.6	7.1	6.0	13.7

Table 3

HAP Emissions from 2002 NEI

HAP metal	Emissions of the listed HAP (tpy) – number of facilities in parentheses			
	Aluminum Foundries (82)	Copper Foundries (56)	Other Nonferrous Foundries (36)	Total (174)
Be	0.0002	--	--	0.0002
Cd	0.003	--	--	0.003
Cr	--	--	1.4	1.4
Pb	0.5	5.7	6.0	12.2
Mn	0.06	0.4	--	0.5
Ni	0.6	1.4	3.9	5.9
Total	1.1	7.5	11.2	20

Emission Points and Controls

- Most HAP metal emissions are from melting furnaces.
- Larger copper and nonferrous foundries have PM control devices.
- Vast majority of aluminum melting furnaces do not have PM controls – low melting temperatures and low emission potential.
- Most foundries already use management practices.

Applicability

- Standards apply to foundries if the amount of HAP metal in the total charge material being melted is :
 - 0.1% or more (by weight) for each of the listed carcinogenic HAP metals (lead, nickel, beryllium, cadmium); and
 - 1.0% or more (by weight) for manganese, the listed non-carcinogenic HAP metal
- Consistent with OSHA requirements and precedent set in other area source rules (metal fabrication, plating and polishing and wood preserving)
- Easy to understand and document

Applicability

(continued)

- Standards apply only to foundries melting ≥ 600 tpy total nonferrous metal
 - Reduce/eliminate burden on sources not included in 112(k) inventory
 - Avoid "artisan" issue – similar to clay ceramics and misc coating "hobbyists" (e.g., very small foundries making bronze or brass trophies)

Basis for the 600 tpy Threshold

- Decided to limit scope of the rule to facilities that were the basis for the listing
- Found that a total of 185 facilities reported 1990 TRI data for the primary SIC code for the 3 source categories...but
- Only 71 of the 185 facilities reported any urban HAP metal emissions
- Therefore, we used available production data & facility employment information to develop a correlation of 26 tpy of production per employee to estimate production levels for several additional facilities.
- Based on the above information, we estimated production levels for each of the source categories:
 - Aluminum: 650 – 9800 tpy
 - Copper: 600 – 9000 tpy
 - Other Nonferrous: 780 – 9100 tpy
- Chose 600 tpy (the most conservative estimate) as the threshold production level

GACT

- Management practices for all foundries subject to the rule
- Add-on PM controls for only the large copper & nonferrous foundries (melting metal $\geq 6,000$ tpy)
- Reflects current industry practices
 - Codifies those practices which have already resulted in significant emission reductions
 - Minimizes cost burden for many small businesses
 - Focuses on the urban HAP metal of interest

Emission Reduction Potential

- HAP emissions reported to the 1990 Toxics Release Inventory (TRI) by 86 foundries in these three source categories totaled 18.2 tpy
- Compared to 13.6 tpy in 2005 with 132 plants reporting
- There's been a large decrease in emissions even though over 50 percent more plants were reporting to the TRI.
- These reductions are consistent with the goals of the Urban Air Toxics Strategy, which uses 1990 as the baseline year and measures reductions against that baseline.

Costs

- Approximately 318 aluminum, copper, and other nonferrous foundries are subject to the final rule and will incur initial one-time costs of \$656,000 and a total annualized cost of \$638,000/yr (an average of \$2,000/yr per plant).

Notification, Reporting, and Recordkeeping Requirements

- Submit Initial Notification no later than 120 calendar days after publication or within 120 days after the source becomes subject.
- Notification of Compliance Status no later than 120 days after the applicable compliance date.
- Keep a copy of each notification and all documentation supporting any Initial Notification or Notification of Compliance Status.
- You must keep records to document conformance with the management practices plan.
- Records documenting that you purchased only metal scrap that has been depleted of HAP metals.
- Records of all performance tests, inspections and monitoring data.

Important Dates

- Promulgation – 6/15/09
- Publication – 6/25/09
<http://www.gpo.gov/fdsys/pkg/FR-2009-06-25/pdf/E9-14613.pdf>
- Compliance Date – 6/27/11

Questions ?

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THE END