



Mercury Releases From Steel Recycling and Production: Federal Regulations and Programs

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Agency, Region 5

Mercury Switch Informational Meeting,
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Mercury Emissions from Steel-Making

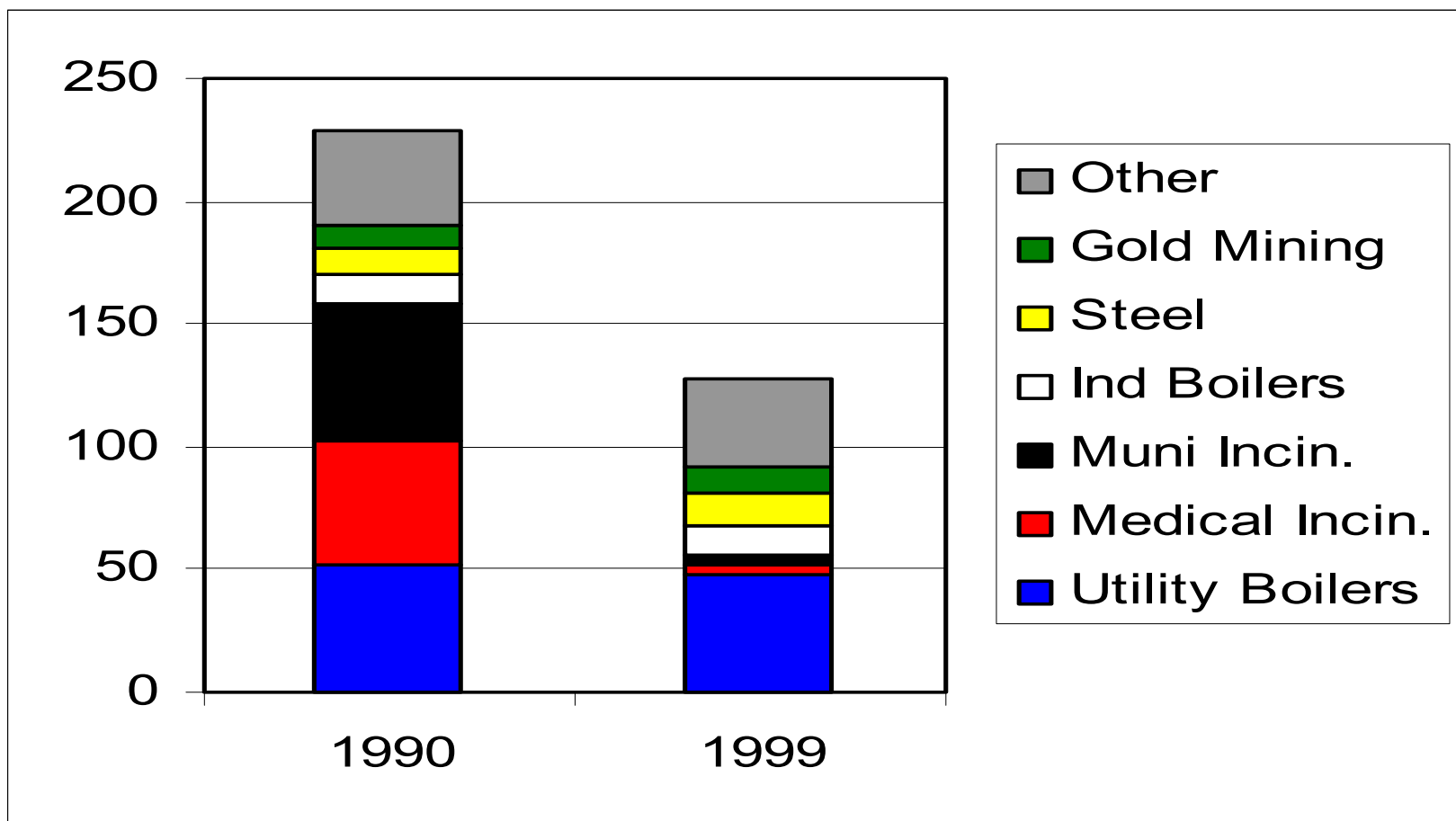
- Primarily from contamination of scrap
- Biggest single contributor—auto scrap
 - Convenience lighting switches-- through 2002 models
 - Anti-lock braking systems– through 2002 models
 - Headlights, panel lighting, alarm systems
- Also: appliances, other equipment
 - Flame sensors in gas ranges
 - Chest freezer light switches
 - Gas flow regulators, boiler controls, etc.
- Primary steel production: some emissions from raw materials– coal, iron



How Important a Mercury Emissions Source is Steel-Making?

- EPA estimates– 10.7 tons/year from EAFs; 1.75 tons/year from iron and steel foundries (resulting from scrap use)
- Total 1999 U.S. mercury emissions: 128 tons
- Steel-making tied for second biggest source after electric utilities (along with gold mining and industrial boilers)

US Mercury Emissions



Source: USEPA, Region 5, Binational Toxics Strategy Mercury Progress Report, November 29, 2004. <http://www.epa.gov/region5/air/mercury/progress04.pdf>

What Regulations Apply?: Iron and Steel Foundries

- Maximum Available Control Technology Standard– 40CFR, Part 63, subpart EEEEE (for major sources)
- Two compliance options related to mercury
 - Use only certified scrap– no post-consumer scrap
 - Operate according to a scrap-selection plan, which must be submitted to EPA by 4/22/05.
 - Plan must require suppliers to remove accessible mercury switches from scrapped autos
 - Must supply material specifications to scrap vendors

Iron and Steel Foundry MACT

- Sources subject to the scrap selection plan requirement must maintain records “that document continuous compliance with” the plan
- Must include a copy of the mercury switch removal procedures used by scrap suppliers
- What other documentation is needed?

Possible Approaches

- Accept removed switches along with scrap shipment; send switches to recycler. Maintain records of switches received and sent for recycling
- Require written proof, accompanying each shipment, that switches have been sent to an appropriate facility
- Both above approaches would be improved by:
 - Establishing expectations for # of switches that should be removed from a given # of scrapped autos
 - Rejecting non-compliant shipments
 - Punishing repeat offenders
 - Periodic audits of suppliers



More Approaches: Let State Programs do the Work For You

- Accept scrap from states that have effective, mandatory switch removal programs
- Accept scrap from vendors that are certified participants in an effective voluntary switch removal program
- Certification could be through a state letter
- Will consider other approaches

Upcoming Regulations: Area Source Standards

- Stainless and Nonstainless Steel Manufacturing Electric Arc Furnaces (EAF)
 - Proposal expected late this year
- Iron foundries; steel foundries
 - Proposals expected late 2006
- Will address mercury emissions; considering scrap selection requirements, spelled out in greater detail
- New Jersey emissions standards

National Partnership?

- EPA attempted dialogue with auto makers, steelmakers, recycling industry, environmental groups
- Education and Outreach to Dismantlers
- Collection and Management
 - Low or No Cost
 - Recordkeeping
- Incentives
 - Financial
 - Regulatory/Other
- Standards for Recovery Rates

Status of Partnership Discussions

- Wide Differences Concerning
 - Scope of Program
 - Length of Program
 - Program Elements
 - How to Share Costs
- In absence of national partnership, issue will be driven by air emissions regulations for steel plants and State regulation/ voluntary programs for scrap sector

Real World Example

- General Scrap (in Winnepeg, Manitoba)
- Mercury switches must be removed
- Vehicles must be spray-painted to indicate that they are mercury-free
- Switches can be brought to the facility
- List materials from which prohibited components must be removed: boilers, clothes washers, dehumidifiers, chest freezers, level detectors, mercury vapor lamps, pressure gauges, gas stoves, sump pumps, thermostats, vehicles
- Detailed procedures for removing mercury from vehicles and appliances



Another Real World Example

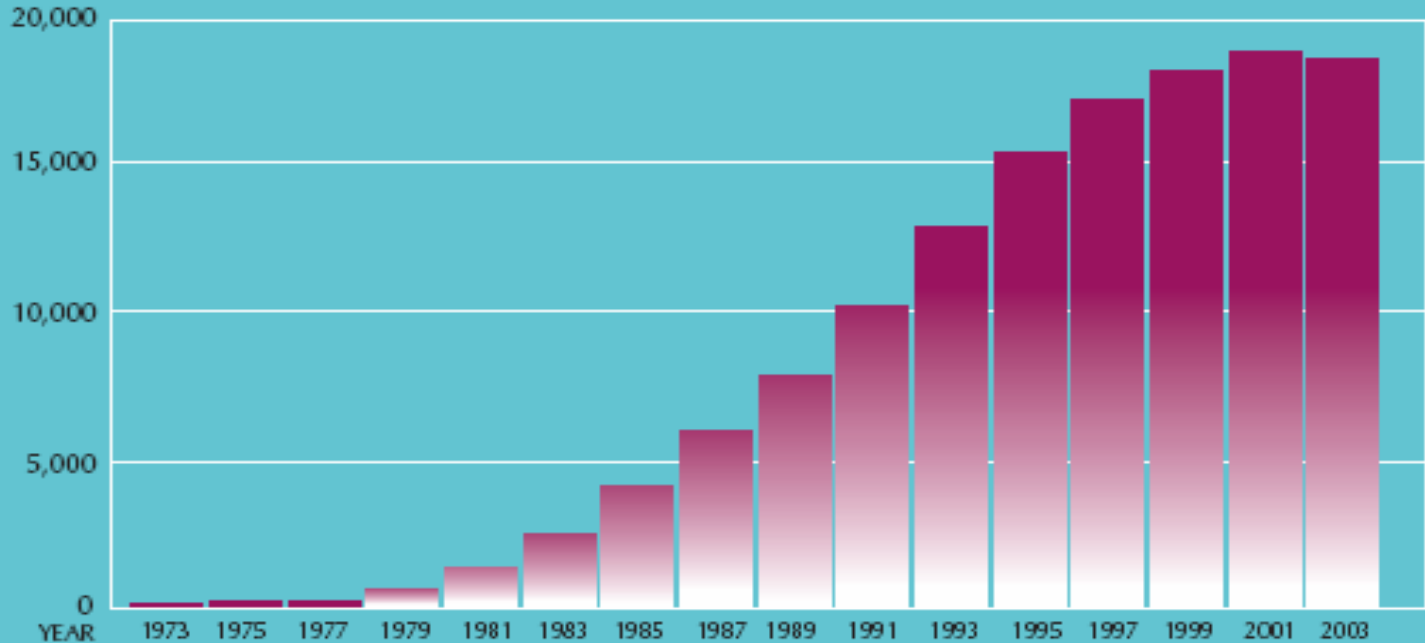
- Gerdau-Ameristeel– formerly Northstar Steel (St. Paul, MN)
- Suppliers must remove mercury switches and deliver to the facility
- Provides free recycling for switches and assemblies
- For switches only, pays \$40/pound

Need for Quick Action

- Mercury content of scrap is at a peak
- Need to act fast to keep most of this mercury out of the environment
- Number of switches in scrapped vehicles will gradually decline over next two decades
- De-contamination of scrap is a very cost-effective approach to mercury control

Estimated Amount of Mercury Contained in Vehicles Retired Annually in the U.S. (Total Mercury in Fleet = ~246 tons or ~217 million switches)

POUNDS OF MERCURY



Source: Vehicle Inventory/Vehicle Survival Rates – based on raw data in ORNL's Transportation Energy Book Edition 21; Lighting Mercury Use – Michigan Mercury Switch Study, 2002 with extrapolation for early model vehicles; ABS Mercury Use – Wards Automotive Sales Data for models known to have mercury ABS switches, State of Vermont Mercury Use Data, 1993; Motor Vehicle Registration Data – US Department of Transportation, Highway Statistic, 2001 October 2002; Mercury content – 1.0 grams per switch capsule.

From Clean Car Campaign, Mercury in Vehicles Update, April 2004



Questions?

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<http://www.epa.gov/region5/mercury/>