

The diagram on the left shows a cross-section of a metal can with a brown top, a white middle section, and a brown bottom section. A red vertical line indicates a coating or layer. A small white tab is shown at the top. To the right, two cans are shown, one in front of the other, both with red and black patterns.

**Metal Can (Surface Coating)  
MACT Floor Analysis**

EPA Presentation  
by  
Dave Reeves  
(Midwest Research Institute)  
June 10, 1999

1

## **Metal Can Industry Overview**

- Produced ~139 billion cans in 1998
- Used > 70 million gallons of coatings and solvents
- Emitted ~30,000 tons of HAP

## Metal Can Industry

- ~50 Companies
- ~240 Production Facilities
- Types of Cans
 

	<u>(Billions)</u>	<u>(% of Total)</u>
– Two-Piece Beverage	101	74
– Food (2-pc & 3-pc)	32	23
– General Packaging	4	3
	139	100

3

## Industry Segments Based on Product Types (Abbreviated Nomenclature)

- Two-piece beverage cans (2-Pc Bev)
- Two-piece draw and iron food cans (2-Pc DI)
- Two-piece draw-redraw cans (2-Pc DRD)
- Three-piece food cans (3-Pc FC)
- Three-piece general line cans (3-Pc GL)
- Three-piece aerosol cans (3-Pc AER)
- Crowns and closures (C&C)
- Decorative tins (Deco Tin)
- Once-piece aerosol cans (1-Pc AER)
- Ends (not really a segment)

4

## Metal Can Coatings

<u>Category</u>	<u>Usage (million gallons)</u>	<u>% of Total</u>
1. End Seal Compounds	20.2	33
2. Inside Spray	15.1	25
3. Interior Base Coatings	13.0	21
4. Overvarnish	5.3	9
5. Exterior base Coatings	3.7	6
6. Rim/Bottom Coat	2.5	4
7. Side Seam Stripe	0.7	1
8. Decorative Inks	0.5	<1

5

## Metal Can Industry HAP Emissions

- Total Industry
  - Glycol Ethers 70%  
(including EGBE)
  - Xylene 12%
  - Hexane 10%
  - Formaldehyde\* 1-5%

\*Most industry data does not include cure volatiles.

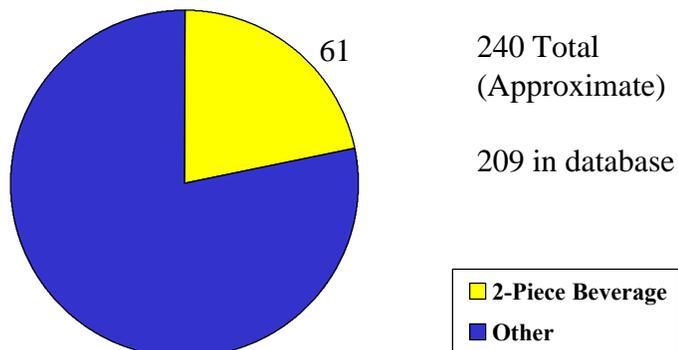
6

## Metal Can Industry

- 209 facilities in database
  - 157 major sources
  - 10 synthetic minor sources
  - 42 area sources
- 78 facilities reported a total of 125 add-on control devices
- < 5 facilities may be small businesses

7

## Number of Metal Can (Mfg) Facilities



8

## **Metal Can NESHAP Issues**

- Two Delisting Petitions
  - 2-Pc Beverage Industry Segment (CMI)
  - EGBE (CMA)
- MACT is driven by combination of “compliant coatings” (e.g., low-VOC) and add-on control equipment (e.g., thermal oxidizers)
- Reported capture/control data has “quality issues”
- Cure Volatiles Issue - Modify Test Method 311

9

## **Cure Volatiles (HAPs)**

- CMI data provided an emission factor for cure volatiles (HAP - formaldehyde): range of 0.7% to 4.0% by weight of total solids in coatings and inks
- EPA chose midpoint: 2.35% of total solids for emission calculations
- Total solids based on all coatings except end seal compounds and side seam stripe
- Used same capture/control efficiencies

10

## **MACT Floor Options**

- Individual coating (category) limits
- Industry segment limits
  - By coating category
  - Overall facility
- Combined segments/coating category limits
  - Coatings
  - Cleaning solvents
- Overall facility emission limit

11

## **MACT Floor Approach**

- Evaluated several different floor options
- Selected MACT option utilizing overall facility emission limit to provide flexibility
- Includes coatings, cleaning solvents, and cure volatiles (HAPs)
- Does not include storage tanks, mixing, wastewater, or handling/transfer emissions

12

## **Existing MACT Floor Determination**

- Based on data from 167 facilities (major and synthetic minor)
- Best 12% = Top 20 facilities (e.g., lowest emitting)
- Used “median” approach (avg. of 10<sup>th</sup> and 11<sup>th</sup> ranked facilities)
- Overall facility emission limit = 0.41 lb HAP/  
gal solids applied (0.05 kg HAP/L solids)

13

## **MACT Floor Determination**

- “Ends only” facilities not included in floor calculations
  - Not considered to have representative mix of coatings and processes
  - Would still have to meet MACT limit (such facilities typically reported very low HAP emissions)

14

## **MACT Floor Determination**

- The 20 MACT floor facilities include a representative mix of all industry segments
- Does not conflict with existing VOC requirements
- Coatings/solvents/solids data readily available to calculate HAP emissions and determine compliance with overall facility emission limit

15

## **MACT Floor Option Selected (Overall facility emission limit)**

- No subcategories or multiple limits
- No coating category or segment definitions
- Allows “internal averaging”
- Simplifies compliance and enforcement
- Reduces recordkeeping and reporting burden

16

## **MACT Emission Reductions**

- Average HAP emitted 2.74 → 0.41 lb of HAP/gal solids applied
- 85% reduction in HAP emissions
- ~25,000 tons of HAP reduced

17

## **Potential Economic Impacts**

- ~50% of major sources without add-on control devices (~90 facilities)
- Working with ISEG to develop costs/impacts
- Improved Capture Systems - cost?

18