

Bath Iron Works

A GENERAL DYNAMICS COMPANY

NESHAP Residual Risk Project Update

Vince Dickinson

March 9, 2005

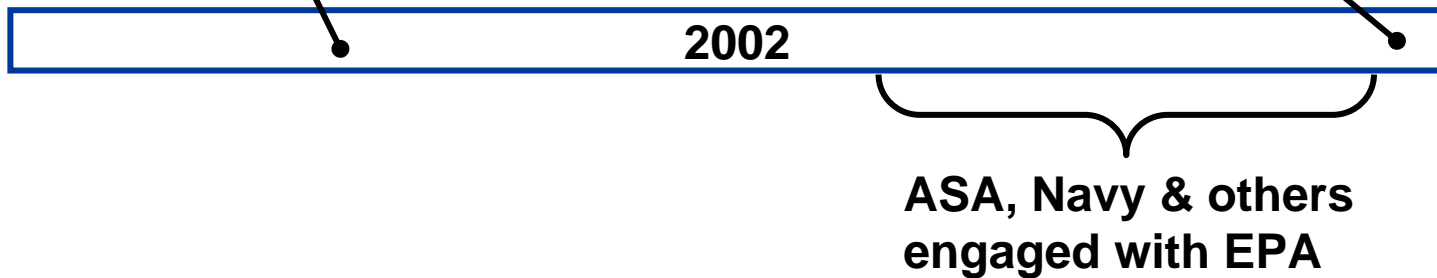
Background

- Section 112(f)(2) of the Clean Air Act directs EPA to assess the risk remaining (“residual risk”) after the application of control technology standards (NESHAP) under Section 112(b).
- Section 112(d)(6) directs EPA to review, and revise as necessary the NESHAP within 8 years of promulgation.
- EPA looking at ALL emissions from shipyards

Background: 2002

**EPA Begins Internal
Residual Risk
assessment**

**12/10/02 - EPA Holds
Meeting with Industry ,
discloses screening
results**



December 10, 2002 Meeting

- Looked at: Avondale, BIW, Cascade General, EB, Ingalls, Jeffboat, NASSCO, Newport News, Norfolk Naval, NORSHIPCO
- Focused on Welding, Solvent Cleaning, Blasting, Painting
- Used 1999 TRI and NTI data with very conservative assumptions using standard HEM dispersion model
- Cancer Threshold of 1×10^{-6}
- Non-cancer hazard index threshold of 0.2

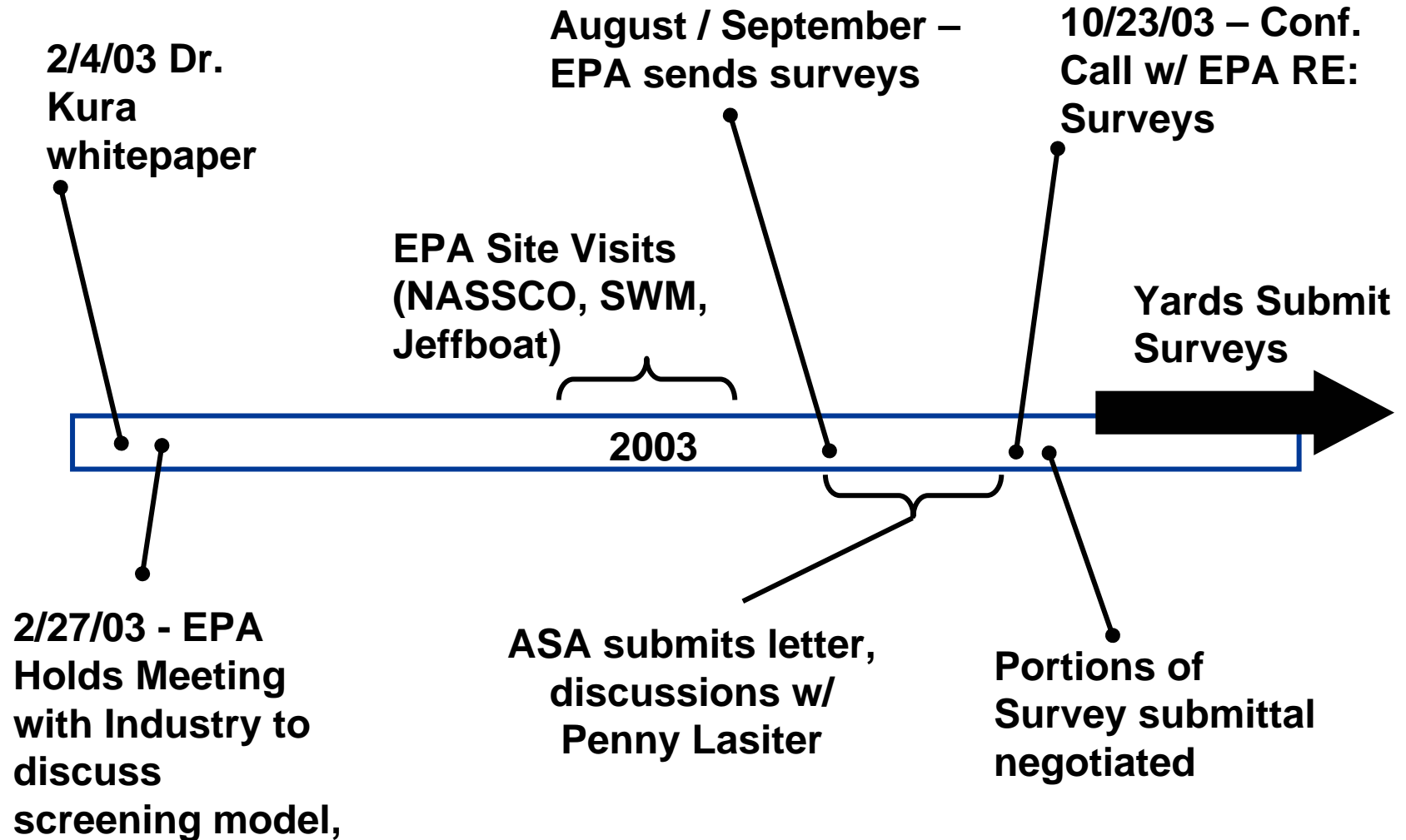
December 10, 2002 Meeting

- EPA assumed conservative thresholds to try to demonstrate no risk existed
 - ↗ Cancer Threshold of 1×10^{-6}
 - ↗ Non-cancer hazard index threshold of 0.2
- 7 Yards screened above Cancer Threshold
 - ↗ NORSHIPCO ↗ Ingalls
 - ↗ Newport News ↗ Avondale
 - ↗ BIW ↗ NASSCO
 - ↗ Jeffboat
- 5 Yards over Non-cancer Threshold
 - ↗ Jeffboat ↗ Avondale
 - ↗ Newport News ↗ BIW
 - ↗ NORSHIPCO

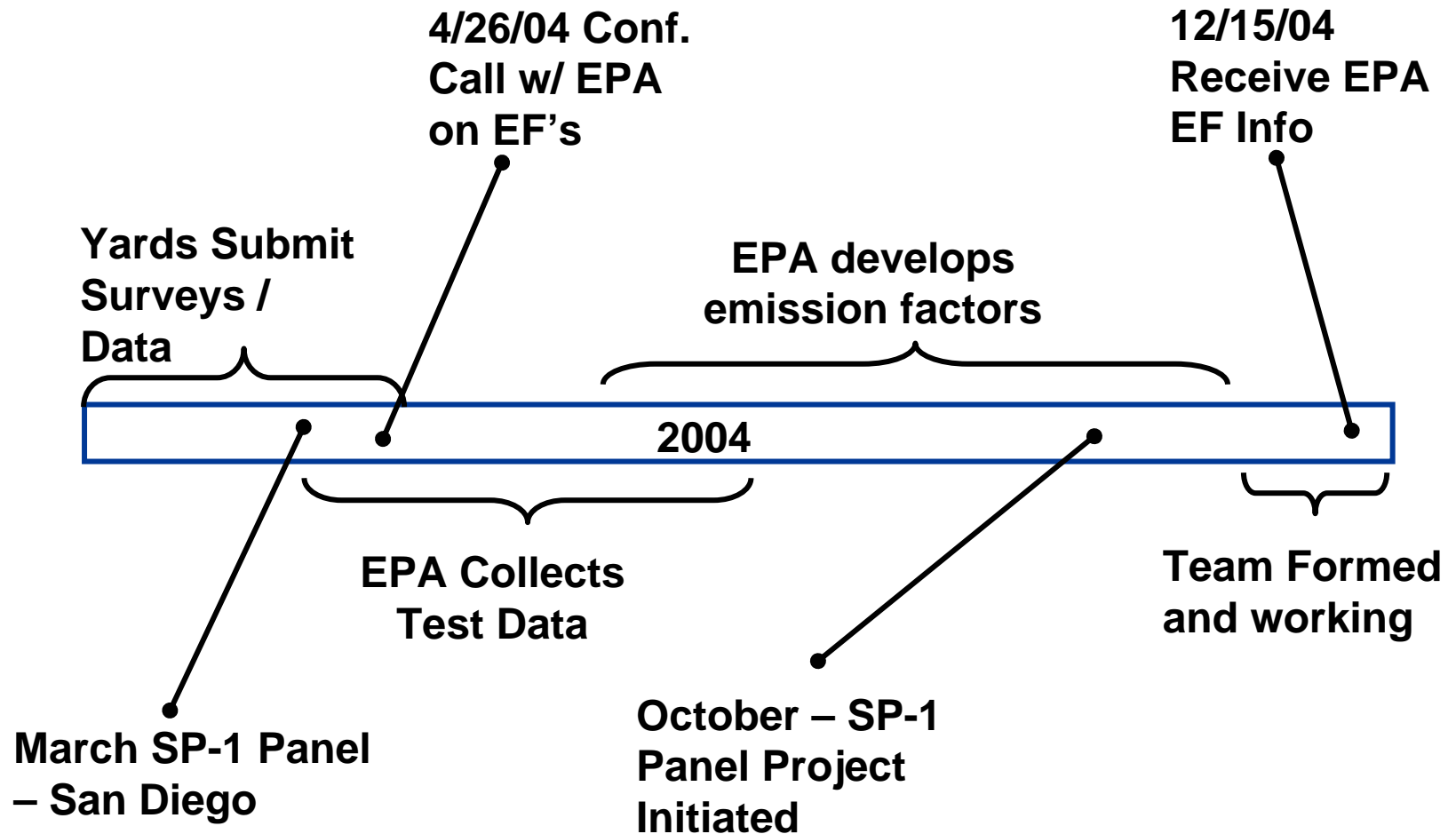
December 10, 2002 Meeting

- EPA concluded that “it appears unlikely that better data would reduce exposure 700x (the amount Jeffboat exceeded cancer threshold).”
- Cr⁺⁶, Mn, Ni are driving the risk.

Background: 2003



Background: 2004



Panel Project - Concept

- “Assemble a Team of shipyard representatives, legal counsel and risk assessment expert to direct shipyard input into the residual risk rulemaking process.”
 - Phase 1 – provide specialized expertise to review EF’s and modeling assumptions prior to model runs by EPA
 - Phase 2 – ensure industry is unified and well coordinated in monitoring and responding to the “legal phase.”

The Team

Shipyard Reps

Vince Dickinson – BIW (Co-Lead)

Mike Chee – NASSCO (Co-Lead)

Wayne Holt – Atlantic Marine

Frank Thorn – NGNN

Shaun Halvax – SWM

Mike Host - NNSY

Risk Expert

Valorie Thompson – Scientific Research
Associated

Legal Expert

John Wittenborn – Collier Scott Shannon

Trade Reps

Frank Losey – ASA

Dan Youhas - SCA

What Have We Been Doing?

- Attended the 1/25/05 Meeting @ EPA
- Held 7 Team Conference Calls
 - ↗ Reviewing EPA EF's and prepare for the meeting
 - ↗ Coordinating additional data collection and submission to EPA in response to the meeting
- Issued 6 e-mail updates to Server-List

Atlantic Marine, NGNN, NNSY & SWM's time is 100% Cost Share

BIW & NASSCO's time is 50% Cost Share

Summary of EPA's Emission Factors

- Based on test data from 5 studies
 - AP-42, 1999 & 2000 NSRP Study, CARB, ESAB
- EPA sorted all data points by welding process and Rod Type (stainless, Mild Steel, Alloy Steel)
- Applied the data sets to statistical model with best fit.
- Calculated the 95% Upper Confidence Limit of the

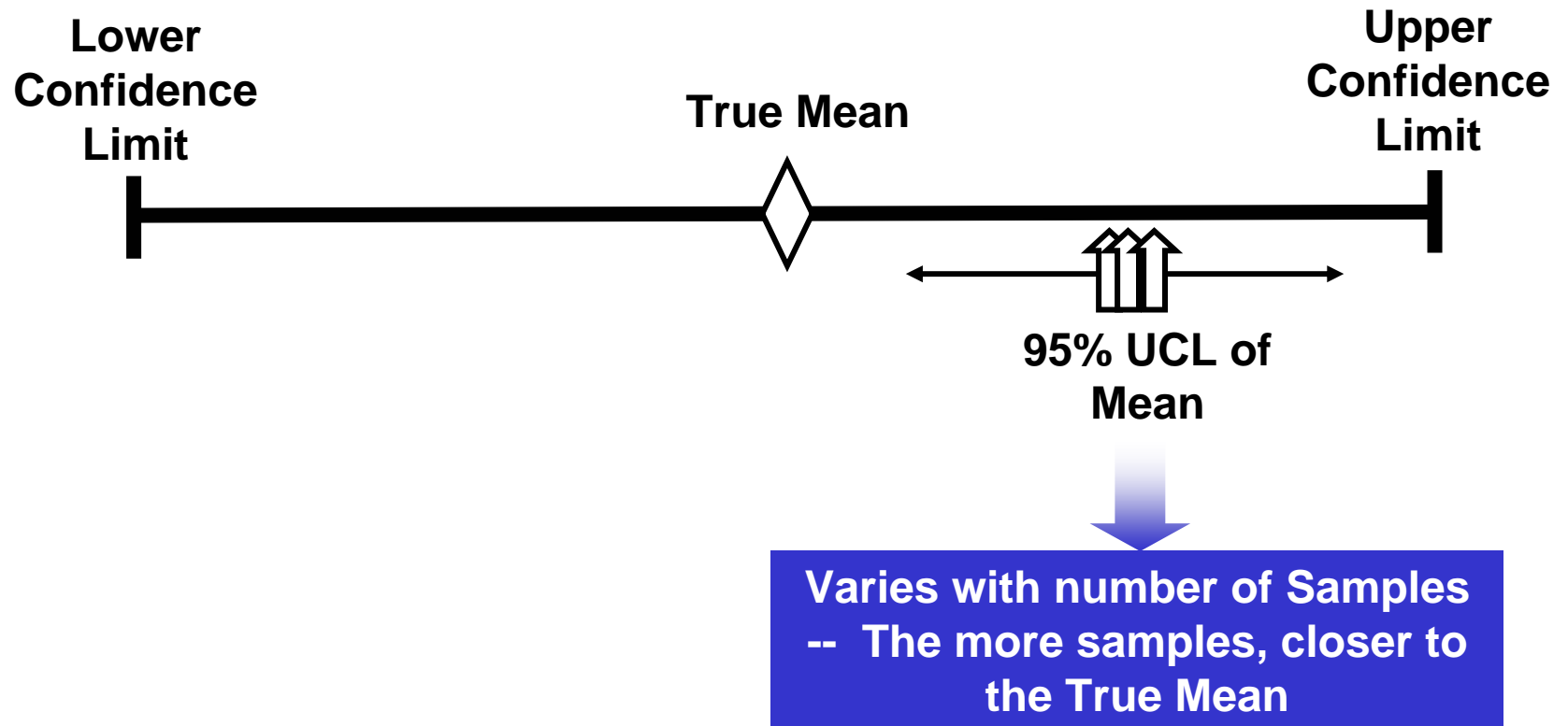
Summary of EPA's Emission Factors

- Where there were an adequate amount of data points, EPA calculated the 95% Upper Confidence Limit of the mean and proposes this as the EF.
- Where data was sparse or absent, the EF selected for the closest combination of welding rod and method.

95% UCL of the Mean

- There exists a “True Mean” for every set of EF Data
 - ↗ The average of ALL possible samples
 - ↗ This number is not known
- Therefore the 95% UCL of the mean is used to account for uncertainty (# samples) and variability (standard deviation)
- **95% UCL of the Mean = the upper confidence limit where the mean will not be exceeded 95% of the time.**

95% UCL of the Mean



Team's Concerns Heading Into the Meeting with EPA - Welding

- Stainless Steel Factors
 - Use of maximum lead EF for all rods, regardless of type or process.
 - EPA info showed much lower values
 - Mn factors for GMAW and FCAW can result in predictions that all the Mn in the rod is emitted.

Team's Concerns Heading Into the Meeting with EPA - Welding

- Mild Steel

- ↗ Assumed Cr content in all rods is 0.5%

- Actual closer to 0.027%, Mil-Spec Max is 0.2%

- ↗ Use of maximum lead EF for all rods, regardless of type or process.

- EPA info showed much lower values

- ↗ Use of FCAW emission data for Ni emissions for all mild steel.

Team's Concerns Heading Into the Meeting with EPA - Welding

- Alloy Steel
 - EPA proposes EF's for Mn, Cr, Ni, and Pb regardless if these metals are present in rod.

Team's Concerns Heading Into the Meeting with EPA - Blasting

- No written material was provided in advance of meeting
- Through discussions with EPA and RTI:
 - ↗ EPA Proposed using an UNO study for EF's
- Proposed using "Report to Congress" that Coal Slag contained 592 ppm Cr⁺⁶

9, 093 Tons coal slag x 8.38% = 762 tons PM (1.5 M lbs)

1.5 M lbs PM x 592 Cr+6 = 902 lbs Cr+6 !!!

Meeting Highlights -Agenda

- I. Initiate Conference Call/Meeting
- II. Introductions
- II. Project Status/Overview
- III. IV. Review Proposed Welding Emission Factors V.
- IV. Lunch (EPA Cafeteria)
- VI. Review Abrasive Blasting Data/Emission Factors
- VII. Break (Optional)
- VIII. VIII. Questions/Comments/Schedule
- IX. Review Action Items
- X. X. Meeting Adjourned

Meeting Highlights

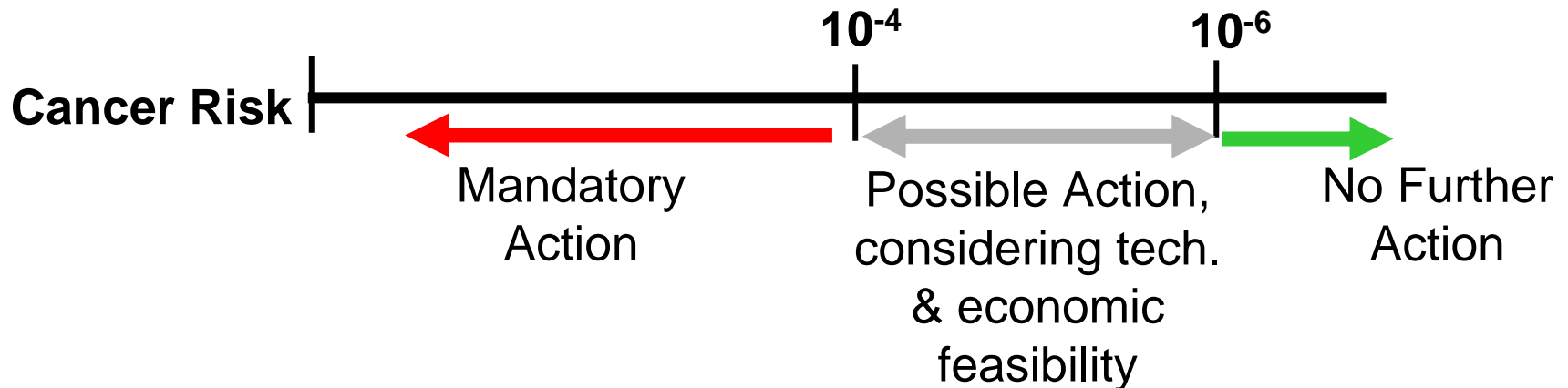
Risk Modeling Overview

- Dr. Roy Smith gave a presentation on methods and inputs for the risk assessment.
- Scope: Sources evaluated
 - ↗ Welding
 - ↗ Coating
 - ↗ Painting
 - ↗ Blasting
 - ↗ Cleaning operations
- Exposure pathways
 - ↗ Main focus – human inhalation
 - ↗ Multipathway or ecological only as needed
- Provided an example using Jeffboat Data
- Clarified “action” levels for cancer and non-cancer risk

Meeting Highlights

Risk Modeling Overview

- Clarified “action” levels for cancer and non-cancer risk



- Non-cancer: >1.0 HI requires action
- Showed welding risk Isopleths for the cancer risk at Jeffboat using AP-42 values and EPA’s recommended values
- Message: **“emission factors are the most crucial item affecting the outcome.”**

Meeting Highlights

Welding Emission Factors

- Detailed discussions on welding emission factors and how EPA arrived at values
- Discussed all of our concerns previously discussed
- Agreed to provide Weld Pad Test Data to validate Industry position that not all Mn is emitted from stainless rods
- Agreed to provide Mil-Spec data on mild steel electrodes
 - EPA had used MSDS to determine Cr content, which overstated content

Meeting Highlights

Welding Emission Factors

- Considerable discussion on 2000 NSRP Welding Study
 - ↗ Significantly higher % of weld rod emitted as TSP vs. other studies (27%)

Meeting Highlights

Blasting Emission Factors

- Dr. Serageldin gave overview of EPA's methodology for calculating emissions for blasting
- EPA proposed to use 95% UCL of the mean from Dr. Kura's "Environmentally Friendly Abrasives" study
 - ↗ 8.38% of coal slag becomes PM
 - ↗ EPA felt UNO study more representative of actual conditions than NSRP study
- Proposed using "Report to Congress" values for Cr⁺⁶ in Coal Slag

Meeting Highlights

Blasting Emission Factors

- Used an example using Avondale data:

9, 093 Tons coal slag x 8.38% = 762 tons PM (1.5 M lbs)

1.5 M lbs PM x 592 Cr+6 = 902 lbs Cr+6 !!!

- Study focused on TPM emission NOT PM10
- Industry was able to provide data showing Cr+6 much lower than EPA's assumptions
- Considerable discussion on effectiveness of shrouds and tenting on PM10 emissions

Meeting Highlights

Blasting Emission Factors

- EPA agreed that PM10 was correct pollutant, and took action to review the appropriate EF.
- Industry agreed to provide additional data on coal slag.
- All agreed that no factor would be used for shrouds controlling PM10 unless industry could provide additional data

Meeting Highlights

Actions

Industry

- Provide Mil-Spec data
- Provide Coal Slag data
- Provide recommendations on SAW and GTAW
- Provide weld composition data for stainless

EPA

- Get back to Industry on PM10 factor for blasting
- Provide final welding data / EF's within 2 weeks of receiving additional Industry data

Follow-up Data Submitted to EPA

- Weld specs for 17 rods
- 26 sets of Weld Pad Test Data
- Coal Slag Grit Data
- Analysis of 1999 Report to Congress
 - Identifying data error
- Recommendations for GTAW and SAW

Since the Meeting

- SRA submitted a memorandum to EPA identifying Industry concerns with the 2000 NSRP
- Telecon w/ EPA RE: Enclosure 1G – Control Technology and Cost Information