

Update on Development of a Fugitive Dust Handbook and Website



Richard J. Countess
Countess Environmental
Westlake Village, CA

DEJF MEETING
July 27 - 28, 2004
Reno, Nevada



THE COUNTESS ENVIRONMENTAL TEAM

- Countess Environmental
 - Richard Countess
 - Susan Countess
 - Bill Patton (web master)
- Midwest Research Institute
 - Chat Cowherd
 - Mary Ann Grelinger
- Mel Zeldin (Technical Advisor)



Committee Members for the DEJF Fugitive Dust Handbook/Website Project

- Duane Ono (Chairman)
- Lee Alter (WGA Project Officer)
- Don Arkell (WESTAR)
- Ed Barry (Chemical Lime)
- Patrick Cummins (WGA)
- Rob Farber (Southern California Edison)
- Susan Hardy (Mountainland Assoc. of Governments)
- Jean-Paul Huys (Nevada DEP)
- Wayne Leipold (Phelps Dodge)
- Toni Richards (Bishop Paiute Tribe)



Tasks for the Fugitive Dust Handbook/Website Project

- Task 1: Develop a Work Plan
- Task 2: Compile Fugitive Dust Information
- Task 3: Summarize Control Options
- Task 4: Prepare Fugitive Dust Handbook
- Task 5: Create Fugitive Website



Task 1: Work Plan

- Submitted draft work plan on April 20, 2004
- Submitted final work plan incorporating the suggestions from DEJF fugitive dust handbook committee members on May 19, 2004



Task 2: Compile Fugitive Dust Information for Eight Fugitive Dust Source Categories

- Emission Estimation Methods
 - EPA (AP-42)
 - CARB
 - Other
- Control Techniques
- Fugitive Dust Compliance Tools



Fugitive Dust Source Categories

- Paved Roads
- Unpaved Roads
- Bulk Materials Handling
- Wind Erosion from Material Storage Piles
- Construction and Demolition
- Open Area Wind Erosion
- Agricultural Tilling
- Agricultural Wind Erosion

Note: Doesn't include fugitive dust from harvesting, unpaved shoulders, or windblown dust from unpaved roads



Status of Task 2

Submitted the following documents on July 9th:

- EPA's AP-42 emission estimation methodology and control techniques (six fugitive dust source categories)
- CARB's emission estimation methodology (five fugitive dust source categories)
- MRI's emission estimation methodology for construction operations
- Compliance tools for fugitive dust sources



Emission Estimation Methodology for Fugitive Dust Source Categories

| CATEGORY | AP-42 | CARB | OTHER |
|-------------------------------|--------------|-------------|--------------|
| Paved Roads | X | X | |
| Unpaved Roads | X | X | |
| Material Handling | X | | |
| Wind Erosion of Storage Piles | X | | |
| Construction and Demolition | X | X | MRI |
| Open Area Wind Erosion | X | | |
| Agricultural Tilling | | X | |
| Agricultural Wind Erosion | | X | |



Status of Task 2 (continued)

- Review documents with the DEJF fugitive dust handbook committee in Reno on July 27th (4:30 to 5:00 PM)
- Rather than revising and resubmitting these intermediate documents per the RFP, we propose to incorporate the relevant material from these documents plus modifications and/or additions recommended by DEJF committee members in the handbook



Task 3: Summarize Fugitive Dust Control Measure Options

Due to the large uncertainty associated with published control cost-effectiveness estimates (units are \$/ton PM reduced), which range over 2 to 3 orders of magnitude, we plan on focusing on developing a standardized/uniform approach for calculating the cost-effectiveness for different fugitive dust control measures using a detailed step-by-step methodology plus providing a sample calculation for each fugitive dust source category



Status of Task 3

Submitted the following documents on July 9th:

- Document containing:
 - step-by-step methodology for calculating cost-effectiveness of fugitive dust control measures
 - sample calculation of cost-effectiveness
 - ranking of published control cost-effectiveness estimates based on cost-effectiveness ranges
 - comparison of cost-effectiveness estimates for a case study (construction site watering)
 - list of control efficiencies for different control measures evaluated by Sierra Research in 2003
- List of California Air District Fugitive Dust Regs.



Status of Task 3 (continued)

- Review documents with the DEJF fugitive dust handbook committee in Reno on July 27th (4:30 to 5:00 PM)
- Rather than revising and resubmitting these intermediate documents per the RFP, we propose to incorporate the relevant material from these documents plus modifications and/or additions recommended by DEJF committee members in the handbook



Control Cost-Effectiveness Comparison

Case Study: Construction Site Watering

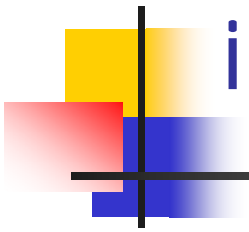
- San Joaquin Valley, CA – 40 acres residential housing project
- Clark County, NV – Grading of 40 acres
 - Low Particulate Emission Potential (PEP)
 - High Particulate Emission Potential (PEP)
- Maricopa County, AZ – One mile long trenching project: 2.42 acres disturbed



Control Cost-effectiveness Comparison

| Assumption | San Joaquin Valley, CA | Clark County, NV | | Maricopa County, AZ |
|--|------------------------|------------------|----------|---------------------|
| | | Low PEP | High PEP | |
| Disturbed Area (acres) | 40 | 40 | 40 | 2.42 |
| Water applied (gallons) | 49,512 | 200,000 | 400,000 | 32,921 |
| Earth moved (yd ³) | 64,500 | NA | NA | 4,700 |
| Control efficiency (%) | 69 | 87 - 91 | 87 - 91 | 50 |
| Cost-effectiveness (\$/ton PM10 reduced) | 56,020 | 365 | 712 | 142,780 |

Potential Explanation for Differences in Cost-effectiveness Estimates



| Item | Cost Impact |
|---|-------------------------|
| Year of Implementation (1994-2002) | Small |
| Cost of enforcement | Small |
| Water truck labor (\$6/hr - \$19/hr) | Potentially significant |
| Water cost | Small |
| Earth moved | Moderate |
| Both wind and activity considered | Moderate |
| Control efficiency (50% - 91%) | Moderate |
| Inconsistent methodology used to calculate baseline emissions | Large |



Control Cost-effectiveness Issues

- Lack of confidence in published control cost-effectiveness values according to control agency representatives
- Demonstrated variability for construction site watering example
- Values highly dependent on assumptions and method of calculation
- Solution: Provide standard method and documentation requirements for calculation of control cost-effectiveness



Task 4: Prepare Fugitive Dust Handbook

- Submitted sample draft chapter (unpaved roads) plus preface for handbook on May 19, 2004 to solicit comments from DEJF fugitive dust handbook committee members early in the project
- Draft handbook due by September 10th
- Final handbook due by November 5th



Proposed Table of Contents for Handbook

PREFACE

INTRODUCTION

FUGITIVE DUST SOURCE CATEGORY #1

- Characterization of Source Emissions
- Emission Estimation Method(s)
- Control Options
- Demonstrated Control Techniques
- Potential Regulatory Formats
- Compliance Tools
- Case Study/Example for Control Application
- References

DITTO FOR OTHER SEVEN CATEGORIES (one chapter per source category)

APPENDICES



Task 5: Create Fugitive Dust Website

- Met with WRAP website master (Brad Bissey) on June 15 to discuss the website format
- Need to discuss the advantages/disadvantages of using frames with DEJF fugitive dust handbook committee members
- Website design/map due by August 16th
 - More realistic to delay the website design until after completion of the draft handbook
- Finalize the website by December 10th
 - Includes populating website with material from the handbook



ANY QUESTIONS?

Please note that a meeting has been scheduled for members of the fugitive dust handbook committee for 4:30 PM this afternoon to discuss the documents submitted on July 9th for Tasks 2 and 3