
Helmet-CAM and Clothes Cleaning Process

Andrew D. O'Brien, M.Sc., CIH, CSP

Helmet-CAM

- ▶ Request to conduct physical site inspections of mining facilities in Colombia.
 - ▶ Major personal safety concerns due to civil unrest.
- ▶ Weekly Friday afternoon attitude adjustment with local plant manager led to discussion re request to visit Colombia.
- ▶ Discussed idea of sending GoPro or POV camera for walk-around that could be sent back to US for review/analysis.
 - ▶ This led to discussion re using camera tied with direct reading aerosol monitor data to pinpoint sources of elevated exposure



Helmet-CAM

- ▶ Contacted Andy Cecala w/NIOSH to discuss idea/concept.
- ▶ With Andy's support, NIOSH commenced development of the EVADE software.
 - ▶ EVADE = Enhanced Video Analysis of Dust Exposure.
- ▶ In parallel, focus on making the system miner friendly.



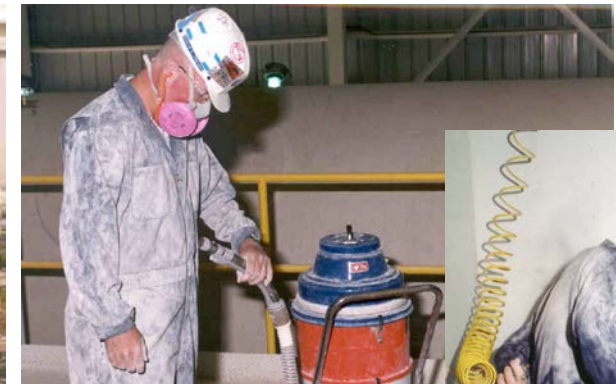
Helmet-CAM

- ▶ EVADE synchronizes playback of video clips and data from almost any type of data logger to allow safety and health personnel to identify the tasks, machines, and locations associated with high exposures. Armed with this knowledge, supervisory personnel can then take actions to reduce or eliminate these identified exposure sources.
- ▶ Helmet-CAM has helped resolve exposures associated with:
 - ▶ Dusty work clothing
 - ▶ Cloth chairs in work areas
 - ▶ Folding bulk/mini-bags collars
 - ▶ Using high pressure water during wash-down
 - ▶ Descending vertical ladders



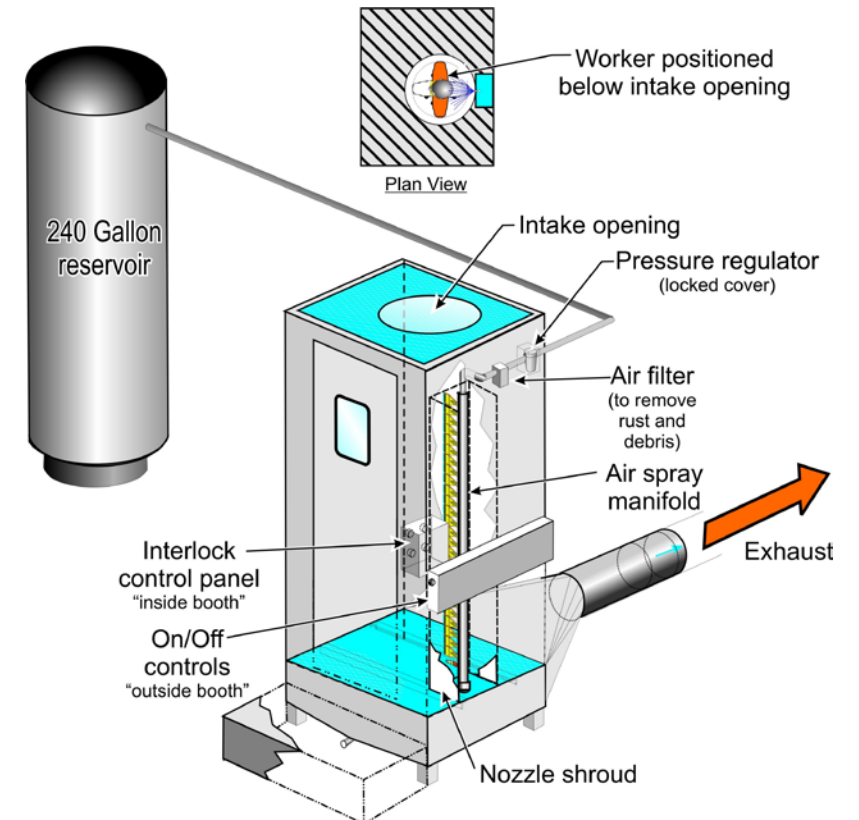
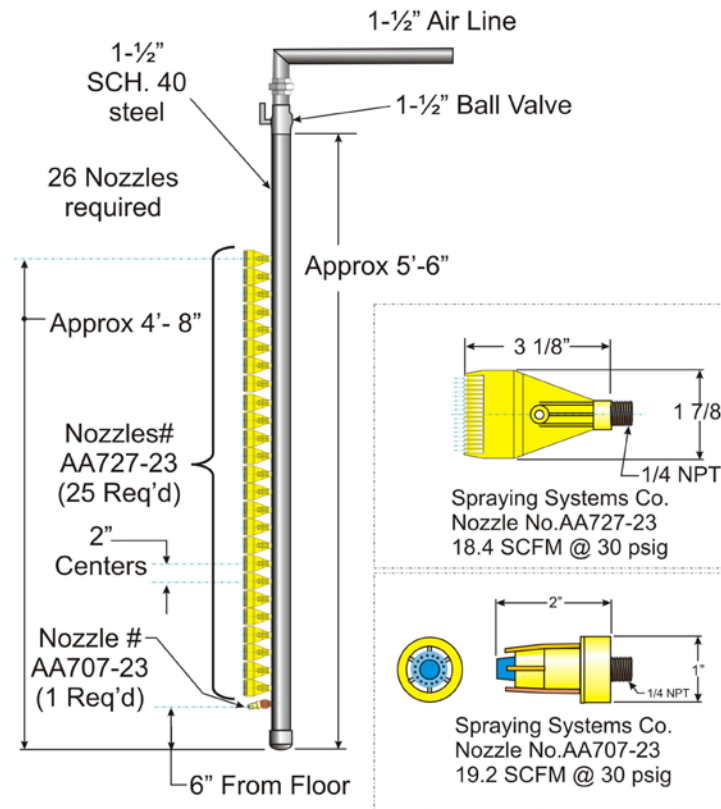
Clothes Cleaning Process

- ▶ Unimin had invested heavily in direct-reading aerosol monitors during the late 1990's.
- ▶ Use of this technology showed that a miner with dirty work gloves "could" have an 8-hr TWA exposure greater than the MSHA PEL (just from the gloves).
- ▶ Former U.S. Bureau of Mines study showed a 10-fold increase in worker dust exposure on a number of separate occasions from dusty work clothes.
- ▶ Contacted Andy Cecala w/NIOSH during 2001 with the aim to cooperatively develop a safe and effective method for cleaning dust from worker's clothes.
- ▶ Initial research and development conducted at the Unimin Marston, NC facility.



Clothes Cleaning Process

- ▶ Uses regulated compressed air to “blow” dust from clothing
- ▶ Dust “blown from clothing is extracted from the booth to a local exhaust ventilation system



Clothes Cleaning Process

- ▶ Process is highly effective and efficient (i.e. < 20 seconds).
- ▶ To use at an MSHA-regulated facility, a Petition for Modification must be submitted and approved.



NIOSH Dust Control Handbook for Industrial Minerals Mining and Processing – Second Edition

- ▶ Developed with support from NIOSH, MSHA, IMA-NA and industry representatives
- ▶ Addresses dust control from the mine to final product loading and shipping

