

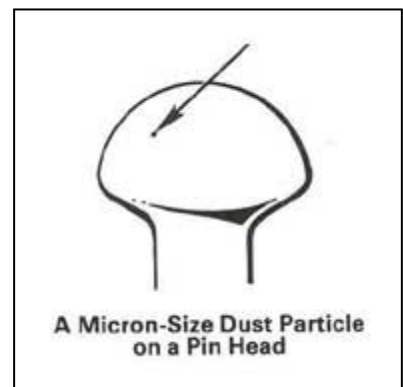
**Former Gorham Manufacturing Site  
Remediation Construction Air Monitoring Information  
333 Adelaide Avenue  
Providence, RI**

Remediation activities are ongoing to address soil impacts at the former Gorham Manufacturing Facility site. The contaminants of concern found in the soils include metals such as lead, arsenic, nickel, copper, and zinc. Since these contaminants don't dissolve into the air, they would only be distributed through dust generated by construction activities. AMEC Engineering & Infrastructure (AMEC) established an action level for airborne dust to protect the students, teachers and residents that are near the construction activities. AMEC followed a standard method to calculate this action level (*American Industrial Hygiene Association, Safety Now: Controlling Chemical Exposures at Hazardous Waste Sites with Real-Time Measurements*). The Rhode Island Department of Environmental Management reviewed and approved the action level.

In our calculation, AMEC conservatively assumed that all of the dust generated at any area of the Site would contain the highest detected concentrations found on the Site. These concentrations were obtained from the Site chemical database which contains soil sample data collected between 1988 and 2006 across the entire Site. To add another layer of protection for the students and residents, AMEC also applied a safety factor of 6 to the calculation. Based on the guidance documents, a safety factor of 6 is typically used for sites that are not well characterized. For sites that are well characterized, like the former Gorham site, a safety factor of between 2 and 4 is typically applied. The resulting action level produced by the two conservative assumptions mentioned above provides a very high level of protection for not only site workers, but also the students and teachers of Alvarez High School as well as the nearby residents against dust exposure.

Using the standard method with the highest chemical concentrations and a safety factor of 6, AMEC calculated an action level for the Site of 0.29 milligrams per cubic meter ( $\text{mg}/\text{m}^3$ ). This is the concentration of dust in air that if reached would indicate the chemicals are at approximately  $1/6^{\text{th}}$  of the occupational exposure limit. An occupational exposure limit (chronic) is set by the Occupational Safety and Health Administration (OSHA) to protect workers by limiting their exposure to chemicals over prolonged periods of time.

Airborne dust is made up of particles of many sizes and can contain solid particles and well as liquid droplets. Not all particles in airborne dust can be seen with the naked eye, but can be measured using direct reading instruments. Airborne dust particles 10 micrometers ( $\mu\text{m}$ ) (also called microns) or larger can be seen with the naked eye; particles smaller than  $10 \mu\text{m}$  cannot. To provide a relative scale of what  $10 \mu\text{m}$  looks like, we included the following Occupational Safety and Health Administration image:



Since we cannot only rely on the presence or absence of visible dust as an indicator to prevent exposure to potential Site contaminants, we use direct reading instruments that are capable of measuring dust particle sizes from 0.05  $\mu\text{m}$  to 10  $\mu\text{m}$ , which includes those particles not visible to the naked eye.

AMEC monitors airborne dust concentrations across the Site using a hand held instrument and four fixed monitoring stations. One station is located upwind of the work area and three stations are located downwind of the work near the fence line. The dust monitoring stations continuously monitor dust levels and will sound an audio alarm when levels are greater than the action level. Given the conservative nature of the action level previously described, it is important to note that if a dust monitoring station were to sound, it does not necessarily indicate a condition of concern. Rather, the alarm provides notice to construction personnel that dust is in the air and either activity should be modified or dust control measures should be implemented to reduce dust levels. The construction contractor also implements dust control measures (such as water spraying) whenever airborne dust levels increase and approach the action level. As a general practice, the Site is watered every one to two hours during times when construction activities are occurring. If it is raining or there is no construction activity there is no watering of the Site. The air monitoring results for each week is posted on the RIDEM Project website and on the Project bulletin board.