

## VENTILATION OF OPERATIONS GENERATING BERYLLIUM PARTICULATE

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Beryllium and beryllium-containing materials, in solid form and as contained in finished products, presents no special health risks. Most manufacturing operations, conducted properly on well-maintained equipment, are capable of safely processing beryllium and beryllium-containing materials. However, like many industrial materials, beryllium and beryllium-containing materials may present a health risk if handled improperly. The inhalation of dust, mist or fume containing beryllium can cause a serious lung condition in some individuals. The degree of hazard varies, depending on the form of the product, how it is processed and handled, as well as the amount of beryllium in the product. Read the product specific Safety Data Sheet (SDS) for additional environmental, health and safety information before working with beryllium and beryllium-containing materials.

In addition, processing beryllium and beryllium-containing materials shall be conducted in accordance with the Beryllium Standard for General Industry (29 CFR 1910.1024) established by the Occupational Safety and Health Administration (OSHA) which includes a Permissible Exposure Limits (PEL) of 0.2 micrograms per cubic meter ( $0.2 \mu\text{g}/\text{m}^3$ ) as an 8-hour Time Weighted Average (TWA), a Short-Term Exposure Limit (STEL) of  $2.0 \mu\text{g}/\text{m}^3$  determined over a 15-minute sampling period and ancillary requirements prompted at an Action Level (AL) of  $0.1 \mu\text{g}/\text{m}^3$  or other specified situations.

Process ventilation is required where beryllium-containing particulate is generated in a manner where there is potential for worker exposure. Local exhaust ventilation (LEV) is the preferred control technology. Where utilized, exhaust inlets to the ventilation system are generally positioned as close as possible to the source of generated airborne particulate. Another method of control is to conduct the operations in a ventilated enclosure designed to contain all particulate within the enclosure and away from the operator's breathing zone. When machining, a high velocity, low volume ventilation system with the collection inlet to the exhaust duct designed as an integral part of the tooling can be an effective method. When ventilation is neither practical nor effective, other engineering and/or work practice controls, such as respiratory protection, must be utilized to control worker exposure.

Critical ventilation parameters, such as velocity, particle capture area, distance from the source and air flow rate, are influenced by the nature of the process being controlled. There is no single set of design parameters that will be effective for all operations. The operations and the process variations requiring ventilation are too numerous to list here. However, the American Conference of Governmental Industrial Hygienists (ACGIH) publishes a guide to effective ventilation system design entitled, "Industrial Ventilation: A Manual of Recommended Practice". The ACGIH publication describes ventilation systems for a wide range of operations. These ventilation designs, properly implemented with sensible shop practice, can provide worker protection from beryllium exposures. Use qualified professionals to design and install ventilation systems. The publication can be obtained by contacting the ACGIH (1330 Kemper Meadow Dr., Cincinnati, OH, 45240, USA) at (513) 742-2020 or through the internet at [www.acgih.org](http://www.acgih.org).

As part of the ventilation equipment, process exhaust air should be directed through a High Efficiency Particulate Air (HEPA) filtering device to the outdoors where it will not be recirculated back to the work area (except for a portable device). A central ventilation system can service several sources. Portable ventilation systems (some as small as a conventional portable “shop vac”) with HEPA filters may be used where the beryllium materials are processed infrequently. Ventilation equipment must be inspected regularly to ensure it is functioning properly. Provide training on the use, operation and maintenance of ventilation systems to all users.



#### **ADDITIONAL INFORMATION**

The information contained in this Safety Facts applies only to the subject referenced in the title. Read the SDS specific to the products in use at your facility for more detailed environmental, health and safety guidance. SDSs can be obtained by contacting the Materion Brush Inc. Product Safety Hotline at (800) 862-4118 or visit our website at [www.materion.com](http://www.materion.com).

Additional information can also be obtained by contacting a Materion Brush Inc. Sales Representative or:

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