RESPIRATORY SAFETY

I. Hazards
   A. Particulates
      1. Glass frit and enamel
      2. Dried bead release
      3. Ground glass and fine glass dust
      4. Grinding and polishing abrasive
      5. Metallic fumes and vapors
      6. Smoke
   B. Gases
      1. From combustion process
      2. From chemical reactions

II. Response: See doctor for chronic and/or severe symptoms

III. Precautionary Actions
   A. Clean with water/damp cloth to keep dust/etc., the a minimum
   B. Follow manufacturer’s directions or NIOSH instructions when using materials
   C. Have adequate ventilation and/or ventilation system in workplace
   D. Replace worn respirator as needed

IV. Protective Equipment: Respirators
   A. Dust Mask
      1. Filters only nuisance dust (example: from sanding)
      2. Ineffective against removing hazardous particulates or gases
   B. Disposable Respirator Rated N100
      1. Designed and tested to remove 99.97% of most particles,
      2. Including dust particles, bacteria, metallic fumes, and cold-worked glass particles
   C. Cartridge-Style Respirator
      1. Rated for specific chemical and toxic gas hazards
      2. Use the one that is certified for the specific hazard

REFERENCES

ADDITIONAL RESOURCES
http://www.artscraftstheatersafety.org/datasheets.html


Websites:


Information about a wide range of air contaminants, including exposure limits for silica containing dusts “SILICA, CRYSTALLINE - QUARTZ CAS: 14808-60-7; Chemical Formula: None H.S. No. 1355” (“...high exposure of silica-containing dusts have revealed high lung cancer risks….”), exposure limits to hematite dust (ferric oxide) used as a polishing agent for glass, jewelry, etc., and other chemicals used by glassmakers.

Explanation of OSHA Permissible Exposure Limits (PELs): http://www.osha.gov/SLTC/pel/

OSHA Occupational Safety and Health Standards, Air Contaminants, Section 7 - VII. Feasibility and Regulatory Analyses: https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=PREAMBLES&p_id=771


High Efficiency Particulate Air (HEPA) Filters info: http://www.hss.doe.gov/nuclearsafety/qa/hepa/


With thanks to Jesse Kohl:
For personal OSHA air sampling: http://www.osha.gov/dts/osta/otm/otm_ii/otm_ii_1.html

Particles: Size “Particles in Practice: How Ultrafines Disseminate in the Body” raises questions about how particles < 100 nanometers (or 0.1 μm) are able to be absorbed into the body and distributed in the cells: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1310959/


Canadian Centre for Occupational Health and Safety: What are the effects of dust on lungs? http://www.ccohs.ca/oshanswers/chemicals/lungs_dust.html#_1_2

How do particulates enter the respiratory system? http://www.ccohs.ca/oshanswers/chemicals/how_do.html


Clearance of inhaled particles, http://www.nanomedicine.com/NMIIA/15.4.3.3.2.htm

Pima County, Arizona, Department of Environmental Quality: Animation on particulates (click on “Lung Attack”), http://www.airinfonow.org/html/activities.html