Ammonia/Formaldehyde Filter Quick Tips

1 The PAPRFC5 Product

What is the Product?
• The product is a filter cartridge design to work with the EVA PAPR and the following contaminants:
  Ammonia  Formaldehyde  Methylamine
  Chlorine  Chlorine Dioxide  Hydrogen Chloride
  Hydrogen Fluoride  Sulfur Dioxide  Particulates (HEPA)

What are the Bullard Advantages?
• The EVA PAPR
  - High airflow, active flow technology, lithium battery, fuel gauge, brushless motor, two speed operation, & dual alarms.
• Simplicity of Single Filter Design
  - MSA Optim Air TL requires 2 filters
  - North Compact Air Plus 200 requires 3 filters
  - 3M Breathe Easy requires 3 filters
  - 3M Jupiter requires 2 filters
• Both AM and FM approval in a single filter cartridge
  - 3M GVP 444 is for Ammonia/HEPA only
  - 3M GVP 445 is for Formaldehyde/HEPA only
  - Bullard PAPRFC5 has Ammonia, Formaldehyde, Methlyamine, Chlorine, Chlorine Dioxide, Hydrogen Chloride, Sulfur Dioxide, Hydrogen Fluoride, and Particulates all in one

2 Target Customers/Industries

What Are the Target Industries for Formaldehyde? (CAS#: 50-00-0)
  American Chemistry Council Fact Sheet - www.formaldehydefacts.org/health_safety
• Wood Product Manufacturing (NAICS 321 & 337)
  - Used in resins of particle board and furniture
• Pharmaceutical Manufacturing (NAICS 325412)
  - Formaldehyde is used to create hard capsules that are used to deliver drugs in the form of pills to millions of people worldwide
• Research Labs (NAICS 5417)
  - Used as a tissue preservative and in processes that identify proteins, DNA and RNA
• Textiles and Apparel (NAICS 313, 314, 315)
  - Permanent Press Fabrics
  - Carpet
• Animal Sciences (NAICS 5417)
  - Formaldehyde is used to preserve specimens
• Healthcare/Other (NAICS 622)
  - Nurses, doctors, dentists use it as a fungicide, germicide, and disinfectant
  - Embalmers use it as a tissue preservative
2 Target Customers/Industries continued

What are the Target Industries for Ammonia? (CAS#: 7664-41-7)

NIOSH Fact Sheet on Ammonia - http://www.cdc.gov/niosh/topics/ammonia

- Research Labs - University, Public, Private. Animal Science. (NAICS 5417)
  - Waste from animal research subjects produces ammonia

- Agricultural (NAICS 111, 112, 115)
  - About 80% of the ammonia produced by industry is used in agriculture as fertilizer
  - Farms have high levels of ammonia due to animal waste storage

- Chemical Processing (NAICS 325)
  - The biggest industrial use of ammonia is in the production of fertilizer
  - Neutralizing acid constituents of crude oil during the refining process

- Pharmaceutical Manufacturing (NAICS 325412)
  - Top Medicines That Contain Ammonia - www.drugs.com/inactive/ammonia-186.html
    Amoxicillin, Divalproex, Etodolac, Fluoxetine, and Gabapentin all contain Ammonia

- Food Processing (NAICS 31111)
  - Ammonia is used to clean machines and as refrigeration method
  - As a source of hydrogen for hydrogenation of oils and fats

- Sewage treatment plants (NAICS 22132)
  - May also release high levels of ammonia used as a purification agent

- Power & Energy (NAICS 21 and 22)
  - Purification of smoke gas in coal-fired or oil-fired power plants. With the presence of ammonia in a reactor the nitrogen oxides are converted into nitrogen and water while passing the reactor. In combination with chlorine, ammonia is also used for water purification

- Mining & Metallurgy (NAICS 212)
  - Extraction of copper, nickel, and molybdenum from their ores
  - Also used as a protective atmosphere for metal heat treatment

- Pulp & Paper (NAICS 322)
  - Substitute for calcium in the pulping of wood

- Rubber & Plastics (NAICS 326)
  - Ammonia is used in the rubber industry for stabilization of raw latex to prevent coagulation during transportation and storage

- Electronics (NAICS 335)
  - High purity ammonia is used for electronic and semiconductor applications