



# Key Factors in Escape Mask Selection



- Threat
- Protection Factor
- Suitability for Population
- Ease of Donning
- Donning Time
- Duration
- Shelf Life
- Cost
- Training





# Escape Mask Types

- Negative Pressure:
  - Usually a hood with an attached filtration system and neck dam
  - With or without nose cup
  - Wearer draws air in through a filter
  - Protection limited by filter media and integrity of neck dam seal
- Powered Air Purifying Respirators (PAPR)
  - Same concept as negative pressure system with the exception that a fan forces the air through the filter to the interior of the hood
  - Usually with a neck dam, but seal integrity can be compromised slightly without system failure
  - May encompass additional filtration media
  - Protection limited by filter media
- Self Contained Breathing Apparatus (SCBA)
  - Usually a hood based system with an attached supply of air or pure oxygen
  - Positive pressure
  - No filtration required, works in nearly all environs



# Escape Mask Types



Essex VRU

ILC Dover SCape



MSA

Quick2000



Sundstrom SA-77





# Notes on Industrial Chemicals

- Toxic chemicals are legitimate articles of commerce
- Capable of being produced in quantities exceeding 30 tons/year at one facility (LCt<sub>50</sub> @ <100,000 mg-min/m<sup>3</sup>)
- 1164 chemicals meet this criterion (eliminating solids at 20<sup>0</sup> C brings the number down to 98)
- Release of bulk quantities of toxic chemicals:
  - Immediate deaths within 400m of release
  - Lethal concentrations up to 5km
  - Concentrations exceeding 100,000 mg-min/m<sup>3</sup>
  - May generate sufficient heat to cause ignition of sorbent bed
  - Severe lack of oxygen in gas cloud
- CSX transports many of these chemicals directly behind this building