Science-based Outreach to Save Lives During a Chemical or Biological Attack

- Training materials for police officers and firefighters:
  - Presentation now being used to train ~40,000 California police officers
  - Training brochure on chem/bio-agent transport in buildings

- Web site with advice for building operators and incident commanders:
  - How to prepare your building
  - What to do during an event
  - Separate advice for indoor/outdoor and chem/bio

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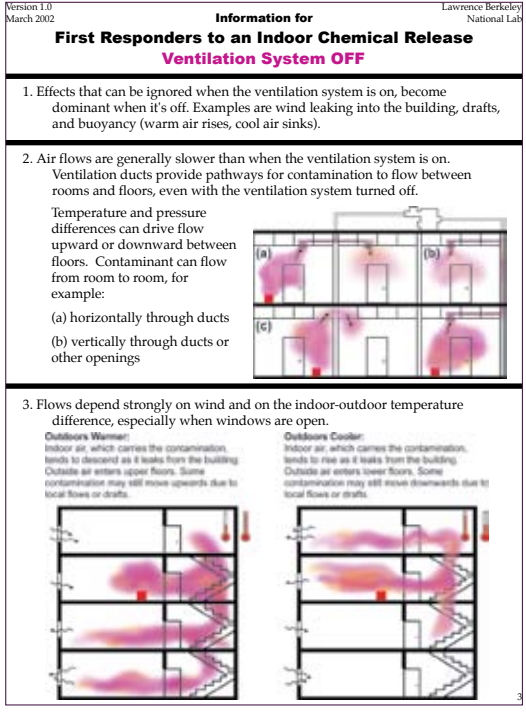

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Information for

Lawrence Berkeley National Lab

First Responders to an Indoor Chemical Release

Ventilation System OFF

1. Effects that can be ignored when the ventilation system is on, become dominant when it's off. Examples are wind leaking into the building, drafts, and buoyancy (warm air rises, cool air sinks).

2. Air flows are generally slower than when the ventilation system is on. Ventilation ducts provide pathways for contamination to flow between rooms and floors, even with the ventilation system turned off.

Temperature and pressure differences can drive flow upward or downward between floors. Contaminant can flow from room to room, for example:

(a) horizontally through ducts

(b) vertically through ducts or other openings

3. Flows depend strongly on wind and on the indoor-outdoor temperature difference, especially when windows are open.

Outdoors Warmer:
Indoor air, which carries the contamination, tends to descend as it leaks from the building. Outside air enters upper floors. Some contamination may still move upwards due to local flows or drafts.

Outdoors Cooler:
Indoor air, which carries the contamination, tends to rise as it leaks from the building. Outside air enters lower floors. Some contamination may still move downwards due to local flows or drafts.

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