

1 Tips on Ethylene Oxide

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3 Ethylene oxide is a colorless gas that, at high levels, can have a sweet, fruity odor. It is synthetically
4 produced for industrial uses including sterilizing medical equipment and foods such as spices. In
5 industrial settings, ethylene oxide is primarily used to produce chemicals such as antifreeze. It is
6 also used to make some personal care products and is present in tobacco smoke. Small amounts
7 of ethylene oxide naturally form in the body during metabolic processes.

8 Inhalation is the primary route of exposure to ethylene oxide. Acute exposure to high levels occurs
9 mostly in occupational settings and can cause dry mouth and GI effects like vomiting and diarrhea.
10 Acute and chronic exposures can both be associated with neurologic effects such as headache,
11 memory loss, and numbness, as well as irritation of the eyes, skin, and lungs. Lung irritation can
12 cause coughing, shortness of breath, wheezing, and bronchial constriction and hyperreactivity.
13 Chronic exposure can also be associated with neutropenia and anemia as well as hematologic and
14 breast cancers.

15 Ethylene oxide biomarkers in blood and urine have limited clinical use because they cannot predict
16 health effects. However, elevated levels can confirm exposure in some situations such as
17 occupational exposures. Refer to U.S. Preventive Services Task Force recommendations for cancer
18 screening.

19 Treatment is primarily supportive, and ongoing exposure should be avoided or reduced when
20 possible.

21 Counsel patients to avoid tobacco smoke, and advise patients who work with ethylene oxide that
22 employers are responsible for informing them of their workplace hazards, providing proper PPE,
23 and ensuring that workspaces are well-ventilated. Counsel these patients to use proper PPE and
24 keep their work areas clean. Consult a specialist in medical toxicology or occupational and
25 environmental medicine regarding a workplace monitoring plan as needed.

26 Visit ATSDR's website to learn more.