



Diacetyl

What is it?

Diacetyl is a chemical formed as a byproduct of fermentation during alcoholic beverage production, and it is used in the production of snack foods and baked goods.

What is it used for?

It is typically used in the manufacturing of artificial butter flavoring and odor for products such as microwave popcorn, cake mixes, and candy.

Where do we find it?

The main source of diacetyl is vapor released in food facilities that produce products such as microwave popcorn. Diacetyl also may be found in homes through the vapor that occurs when a bag of finished microwave popcorn is opened.

Is it safe? What is the safe level of use?

Worker inhalation of diacetyl through flavoring volatiles has generated concern. Using studies suggesting a correlation between inhalation of flavoring volatiles and lung disease in microwave popcorn factory workers, The National Institute for Occupational Safety and Health (NIOSH)—in an effort to reduce worker exposure to flavoring chemicals—drafted “a Recommended Exposure Limit (REL) of 5 parts per billion (ppb) as an eight-hour, time-weighted average, (TWA) during a 40-hour work week”.¹

What do other countries say?

Diacetyl is under scrutiny in the European Union (EU), however EU is waiting for more data before developing standards.

Why is there a concern?

Diacetyl has been linked to the lung disease bronchiolitis obliterans, especially in occupations that involve the manufacturing or use of certain artificial butter flavorings.

What is being done to reduce worker exposure?

NIOSH recommends the following steps to industry for worker safety: personal protective equipment, worker education to increase awareness, symptom reporting, proper ventilation design, and the use of substitute products to reduce risk. Since, flavoring generally has many chemicals—not just diacetyl—substitutes providing the same diacetyl function may or may not reduce the risk of lung disease; more research is needed.



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What can I do to reduce my exposure to diacetyl?

Although NIOSH does not anticipate significant risk to normal consumers of microwave popcorn, based on limited available data, it is suggested that consumers use proper ventilation and wait for the microwave popcorn to cool. ² An example of atypical popcorn consumption illustrates that there is an exception to every rule: a Colorado man was diagnosed with lung disease and it was linked to ten years of inhaling microwave popcorn vapors from his two bags a day staple.

Summary:

NIOSH developed protective guidelines for workers, who may be exposed to diacetyl through inhaling flavoring vapors at a food facility. Although it is not anticipated that consumers are at risk from normal consumption of food products that contain diacetyl, food manufacturers are taking steps to find safer alternatives.

Referenced sources for Diacetyl:

¹ <http://www.cdc.gov/niosh/updates/upd-08-15-11.html>

² <http://blogs.cdc.gov/niosh-science-blog/2008/11/diacetyl/>

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