



599 North Avenue, Suite 8  
Wakefield, MA 01880  
Phone: 781-245-1400

## Popcorn Lung

There have been numerous news stories recently about Popcorn Lung. Popcorn Lung is the popular name given to a severe obstructive lung disease. The disease is caused by diacetyl which is a prominent chemical found in butter flavorings. This flavoring is used extensively in microwave popcorn products. Thus the term "Popcorn Lung" was coined.

Diacetyl and other components of butter flavorings are volatile, which means they evaporate into the air and can be inhaled by workers handling these mixtures. Diacetyl (also called butanedione or 2,3-butanedione, molecular formula  $C_4H_6O_2$ ) is a natural byproduct of fermentation and is also synthesized by chemical manufacturers. Diacetyl gives butter and certain food flavorings a distinctive buttery flavor and aroma. Food flavorings containing diacetyl are used in microwave popcorn and other snack foods, pet foods, candies, baked goods, and other food products. Diacetyl is found in beer and other fermented beverages.

Many symptomatic individuals who were exposed to the flavorings and had undergone a lung biopsy were found to have an irreversible type of lung damage called constrictive bronchiolitis obliterans. Bronchiolitis obliterans occurs when small airways become inflamed and scarred, resulting in the thickening and narrowing of the airways.

Constrictive bronchiolitis obliterans is a rare potentially life threatening lung disease characterized by cough, shortness of breath with exertion, and spirometry findings of fixed airway obstruction. A fixed obstruction means there is no improvement in lung function even after administration of asthma medication.

First indications of this disease were found by the Missouri Department of Public Health in May 2000. Shortly thereafter OSHA instituted a national emphasis program for microwave popcorn processing facilities.

There has been only one documented case of Popcorn Lung Disease in a non-factory worker. Wayne Watson of Colorado ate at least two bags of microwave popcorn a day for about ten years. He enjoyed breathing in the steam from the freshly popped bag. His exposure was frequent and long term. Risk of developing Popcorn Lung Disease for the average microwave popcorn consumer is expected to be low. Consumers should avoid breathing in the steam as this is when the highest concentration of diacetyl and other flavoring compounds are present. Eating diacetyl is not a significant health

hazard. Many microwave popcorn manufacturers are using different flavoring formulations to minimize risk to employees and consumers.

Popcorn Lung is a prime example of the lack of knowledge associated with the long term exposure to many chemicals that are used in the workplace. Diacetyl is an FDA Approved flavoring, yet the inhalation of this chemical can cause a severe lung disease. Corporations should strive to lower all chemical exposures to the lowest level possible to ensure the long term health of employees.

If your company has not had an industrial hygiene evaluation please call us to discuss. Cashins & Associates, Inc. can review your workplace for industrial hygiene risk factors to better position your company to prevent long term employee health issues.