



State of California—Health and Human Services Agency  
Department of Health Services



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**Subject:** Two Cases of Bronchiolitis Obliterans Among California Flavoring Industry Workers

Dear Health Care Provider:

The Occupational Health Branch (OHB) of the California Department of Health Services is alerting you to two cases of bronchiolitis obliterans among workers at food flavoring companies in California. Summaries of the cases and other resource information are enclosed. Bronchiolitis obliterans is a serious, disabling, and sometimes fatal disease that has been linked to diacetyl, a butter flavoring ingredient. It is an uncommon occupational disease, and is often misdiagnosed. The references<sup>1</sup> below and the following information can help you recognize and diagnose work-related bronchiolitis obliterans:

**Take an occupational history** including a description of all jobs held, specific exposures to chemicals, and reporting of symptoms in other workers. Ask for Material Safety Data Sheets (MSDSs) for the chemicals. Diacetyl should be listed under Hazardous Ingredients, section 2 of the MSDS, by the CAS number 431-03-8. You may need to contact manufacturers for specific names of trade secret chemicals.

**Ask about symptoms.** The main respiratory symptoms experienced by affected workers include cough (usually without phlegm) and shortness of breath on exertion. Symptoms typically do not improve at home, and on weekends and vacations. Usually symptoms are gradual in onset and progressive, but severe symptoms can occur suddenly. Some workers experience fever, night sweats, and weight loss. Symptoms have been incorrectly attributed to asthma, chronic bronchitis, emphysema, pneumonia, and smoking.

**Conduct a medical evaluation.** Spirometry most often shows fixed airways obstruction and sometimes shows restriction. Lung volumes may show hyperinflation. Diffusing capacity of the lung is generally normal, especially in early disease. Chest X-rays are usually normal. High resolution chest computerized tomography (CT) scans at full inspiration and expiration may show findings consistent with bronchiolitis obliterans. A lung biopsy may be necessary to make a definitive diagnosis.

Please contact OHB at (866) 282-5516 if you suspect a case, or if we can be of further assistance.

Sincerely,

Janice Prudhomme, D.O., M.P.H., Public Health Medical Officer

<sup>1</sup> Kreiss K, et al. (2000). Clinical bronchiolitis obliterans in workers at a microwave-popcorn plant. N Engl J Med 347:330-338. The National Institute for Occupational Safety and Health (NIOSH) website at [www.cdc.gov/niosh/topics/flavorings/](http://www.cdc.gov/niosh/topics/flavorings/).

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