



**Safety and Health Assessment and Research for Prevention Program (SHARP)**

*Promoting Safer, Healthier, Workplaces*  
PO Box 44330, Olympia, WA 98504-4330

Dear Physician,

We ask that you report any possible case of bronchiolitis obliterans or food flavoring lung disease to the SHARP program.

**Have you seen a case of food flavoring lung disease?** Workers exposed to food flavorings have developed severe lung diseases. Some workers develop asthma, bronchitis, or a rare lung disease called bronchiolitis obliterans. Diacetyl is the food flavoring most commonly connected with these lung diseases.

Please consider the following information.

**1. Because diacetyl imparts a buttery taste to food it is added to a wide variety of foods. Workplaces using diacetyl make:**

- Microwave popcorn
- Prepared frosting
- Milk and butter
- Flour mixes
- Cookies
- Crackers
- Candy
- Potato chips
- Ready-to-mix desserts
- Confectionery products
- Chocolate
- Cocoa products
- Shortening
- Food oils and oil sprays
- Margarines
- Flavored syrups
- Corn chips
- Gelatin dessert preparations

**2. These industries may use products that contain diacetyl.**

- Restaurants (butter flavored grill oils or butter substitutes containing diacetyl).
- Packaged popcorn.
- Flavoring extracts and flavoring syrups manufacturers.
- Candy and other candy covered popcorn products manufacturers.
- Breakfast foods/non chocolate confectionary manufacturing.
- Confectionary and nut stores.

**3. How do you assess possible worker exposures to food flavorings and diacetyl?**

Diacetyl exposure comes in the form of vapors, dusts or sprays. When assessing a patient's occupational history, obtain a description of all jobs held and specific

chemical exposures. When assessing a patient's occupational history, obtain a description of all jobs held and specific chemical exposures. Restaurant workers may use products that contain butter-flavored oils and butter substitutes. These products likely contain diacetyl although it may not be specifically listed on the product ingredients. For workers involved in food production, review the Material Safety Data Sheets (MSDS) for product ingredients. Diacetyl may be listed by name or by the Chemical Abstract Service (CAS) number 431-03-8 on the MSDS. While the MSDS sheet can be helpful, please be aware that diacetyl may not be listed on the MSDS sheet if it is present at about 3% or less. If you suspect symptoms are related to food products used in the workplace, contact the product manufacturer to determine if diacetyl may be present.

**4. What clinical history is consistent with a diagnosis of bronchiolitis obliterans?**

The respiratory symptoms to look for include cough (usually without phlegm) and dyspnea on exertion. Symptoms do not improve at home, on weekends, or on vacations. Symptoms are typically gradual in onset and progressive, but acute severe symptoms can occur. Some workers experience fever, night sweats, and weight loss. Symptoms have been incorrectly attributed to asthma, chronic bronchitis, emphysema, pneumonia, and smoking.

**5. What diagnostic and medical evaluation is appropriate?**

Spirometry most often shows fixed airways obstruction and sometimes shows restriction. Lung volumes may show hyperinflation. Diffusing capacity of the lung is generally normal (unlike emphysema or chronic bronchitis), especially in early disease. Chest X-rays are usually normal. High resolution chest computerized tomography (CT) scans at full expiration may show air trapping and is a finding consistent with bronchiolitis obliterans.

Please contact SHARP if you suspect a case of food flavoring lung disease (Toll Free: 1-888-667-4277) or would like more information about bronchiolitis obliterans associated with exposure to food flavorings. More information about diacetyl can be found at SHARP's website: [www.LNI.wa.gov/Safety/Research/HazardousChem/FoodFlavor/](http://www.LNI.wa.gov/Safety/Research/HazardousChem/FoodFlavor/)

Sincerely,



David Bonauto, MD, MPH,  
Associate Medical Director  
Washington State Department of Labor & Industries  
SHARP Program  
PO Box 44330  
Olympia, WA 98504-4330  
Ph: (360) 902-5664  
E-mail: [bone235@LNI.wa.gov](mailto:bone235@LNI.wa.gov)