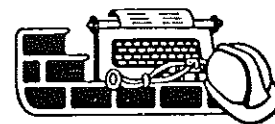


WOHRC FACT SHEET

WOMEN'S OCCUPATIONAL HEALTH RESOURCE CENTER



Danger: Lungs At Work

Many women, as well as men, are exposed at work to substances that irritate the lungs. Textiles, chemicals, detergents, pottery, porcelain and many other workplace materials give off dusts, fumes or gases that may cause lung damage. Constant irritation over a long period of

time can result in a variety of infections and breakdowns in the respiratory system, leading to such diseases as chronic bronchitis, byssinosis (brown lung) and emphysema. If a worker exposed to lung irritants smokes, her chances of developing respiratory disease multiplies.

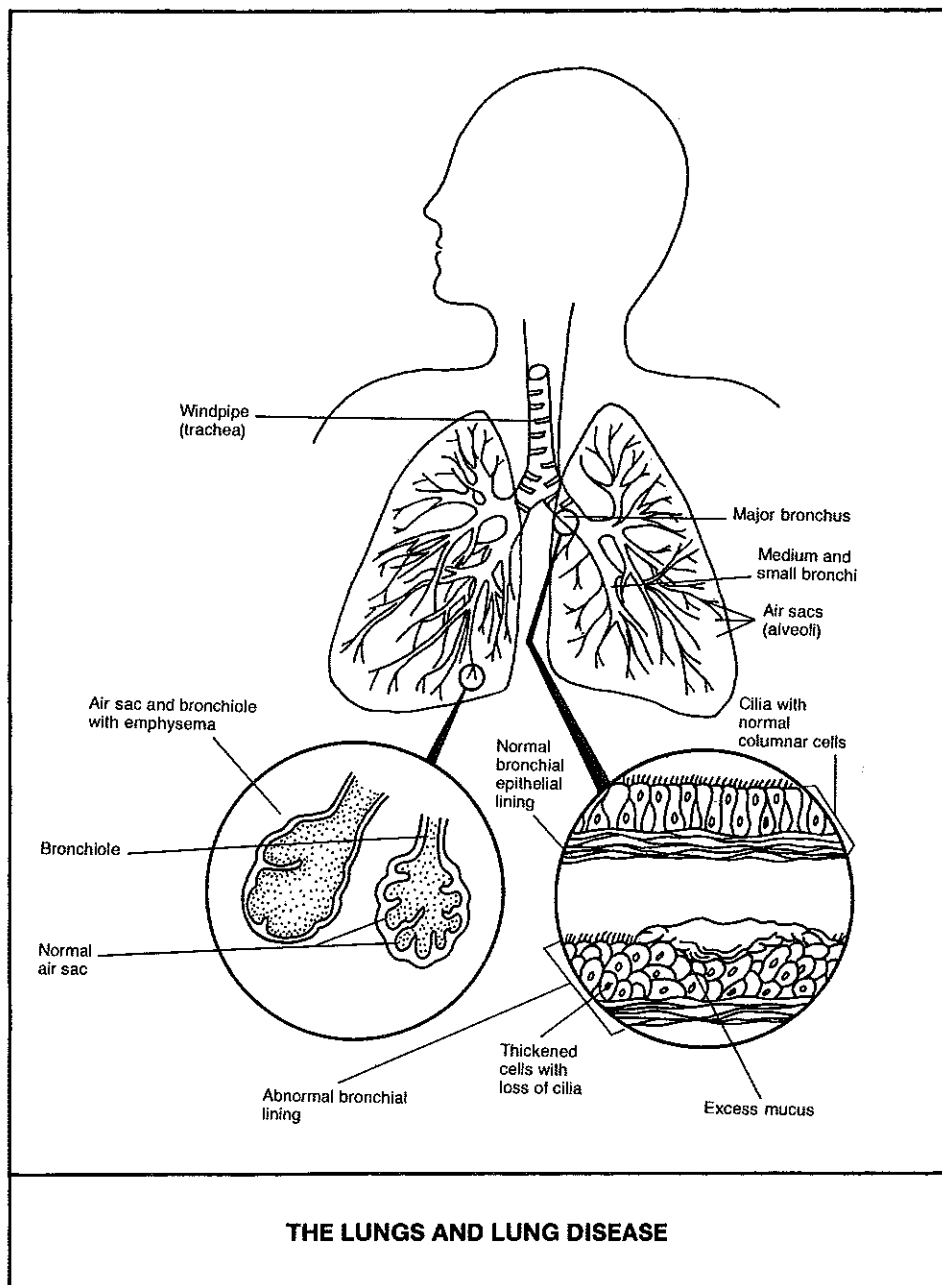
How the lungs work

The lungs perform the vital function of transferring oxygen, which is necessary for life, to the blood which circulates it throughout the body. They are a part of the respiratory system which also includes the trachea or windpipe, the major breathing tube which connects to the nose and throat. This tube branches into two other main airways, the bronchi, one in each lung, which branch out further into medium-sized, then smaller airways, the bronchioles. These smallest airways end in delicate air sacs called alveoli, which resemble clusters of grapes. There are millions of such sacs throughout the lungs, all surrounded by tiny blood vessels. The oxygen from the air diffuses through the very thin walls of the alveoli into the red blood cells which transport it around the body.

The walls of the airways of the respiratory system are lined with mucus-producing glands like those of the nose. When the airways are irritated by dust, fumes or foreign particles in the air, these glands produce more mucus in order to dissolve and carry away the irritants. Constant irritation by smoking or industrial pollution can cause the mucus-producing glands to become swollen, blocking the airways.

The excess mucus from the glands may lead to chronic bronchitis, or it may cause pressure on the alveoli, or air sacs, causing their walls to tear or break down. This is emphysema.

When either of these conditions develop, the oxygen that passes through the alveoli walls is limited, and the air and fluid in the lungs become stale and more prone to infection which, in turn, leads



to further lung damage. A vicious cycle has set in.

Textile work and byssinosis

Byssinosis, or brown lung, is caused by raw cotton dust. In some individuals it causes an allergic response: the small airways contract, making it difficult to exhale air. However, byssinosis has also been found to affect people who do not show an allergy. Either the cotton dust itself or a microorganism associated with it causes the lung tissue to harden. Byssinosis has been shown to lead to airway obstruction and serious lung impairment in periods of exposure shorter than 10 years.

Cotton mill workers have also been found to suffer from a disproportionate amount of chronic bronchitis, including wheezing, shortness of breath and cough. Cigarette smoking by cotton mill workers was shown in one study to quadruple the bronchitis rate.

Work with other kinds of textile fibers, both natural and synthetic, can also be damaging to the lungs, although not as much so as cotton dust.

At risk: textile workers in mills producing cotton, synthetic fiber, wool, soft hemp, flax, sisal and processing of jute and kapok.

Chemical irritants

Chemical dusts and fumes, another cause of lung impairment, affect women in a number of industries. Meat wrappers in supermarkets often develop an asthma-like response when sealing the wrap, made of **polyvinyl chloride**, with a hot wire melting device. The heat releases gases and fumes, among them **phosgene** and **hydrochloric acid**, which are known to induce respiratory illnesses. The kind of refrigerated air in which meat wrappers work is also known to aggravate respiratory problems, although there is not yet enough research to document this in the industry itself.

Workers in plastics factories are exposed to similar fumes as well as to **plastics additives** such as **plasticizers** and **stabilizers**. Rubber workers, in addition to chemical fumes, may be exposed to such dusts as **talc** and **carbon black**. In one study, rubber workers who both smoked and were exposed to dusts and fumes were found to be 10 to 12 times more likely to have to retire because of lung disabilities than workers in unexposed areas of rubber factories who did

not smoke.

Cleansing agents, which are used by large numbers of women both on and off the job, have also been shown to sometimes cause acute respiratory responses.

At risk: meat wrappers; plastics and rubber workers; household workers; laundering, cleaning and other garment service workers.

Industrial dusts

A variety of dusts are known to cause the formation of fibrous tissue in the lungs. The most dangerous of these is **asbestos** which can also cause cancer. One study at a factory producing asbestos textiles and insulation materials found that women with a high degree of asbestos exposure lasting for as little as two years suffered excess rates of cancer of the lung. Another group of women employed longer but with lesser exposure suffered a mortality rate three times the average from other respiratory diseases.

A variety of **industrial dusts in contaminated clothing** can be hazardous to laundry workers. Lung disease has been found in women who laundered clothes for English pottery workers, and cases have been reported of cancer among wives and families of asbestos workers who brought home clothes to be laundered.

Cosmetologists and hairdressers, who are daily exposed to **sprays and lacquers**, may also be in danger of lung disease, although further research on this question is still needed. **Aerosol sprays** are known to be particularly hazardous because the droplets they exude are extremely small and can make their way deep into the respiratory tract where they can do the most harm. Household and janitorial workers who use aerosol sprays are also at risk.

Scarring and hardening of lung tissue has been reported among women employed in the manufacture of porcelain electrical parts where there was known exposure to **silica**. This is the dust that causes silicosis, an occupational disease known since the building of the pyramids.

At risk: hospital and medical workers; household and janitorial workers; beauticians; and workers in asbestos and porcelain factories.

Plant and animal dusts

In addition to fiber dusts, such as that from cotton, other plant and animal dusts may cause lung disease. Some

infect the alveoli and cause flu-like symptoms including fever, chills, a dry cough and a bluish tinge to the skin caused by lack of oxygen. If exposure is longlasting, a serious chronic lung ailment may develop.

A number of illnesses connected with agriculture and the raising of animals come under this heading. They include **farmer's lung** (from moldy hay); **mushroom worker's lung** (from mushroom compost); **bird fancier's lung** (from pigeon, parrot and other droppings); **turkey raiser's disease** and **chicken raiser's disease**.

According to some research, severe allergic reactions to **housedust** may be caused by a mite in the dust. **Enzymes** used in detergents were found to cause such allergic responses that products including them have been banned from further production in the United States.

The most widespread reactions of this kind, however, probably come from **contamination of humidifiers, air conditioners and heating systems by a variety of micro-organisms**. In one office where workers came down with chills, fever and shortness of breath, examination of the air conditioning system revealed that it was contaminated with an organism that has been associated with farmer's lung. Another outbreak, in a stationery factory, was traced to contaminated water in the air conditioning system.

At risk: office workers; household and janitorial workers; agricultural workers.

*Much of the above material was adapted from the article, **Occupational Lung Disease and Cancer Risk in Women**, by Jeanne M. Stellman, PhD, and Steven D. Stellman, PhD, in the November 1983 issue of **Occupational Health Nursing**.*

©1984

For permission to reprint this fact sheet, information about bulk orders, or any other information on this topic, write to:

Women's Occupational Health
Resource Center
School of Public Health
Columbia University
21 Audubon Ave., 3rd floor
New York, New York 10032