Occupational Lung Diseases
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Because the symptoms of many of the occupational lung diseases may not appear for years, many affected workers will be in the older age group with few transferable skills at the time of diagnosis and for that reason, may be considered totally disabled in regard to vocational potential.

Exposure to organic or inorganic dusts and noxious fumes can occur as a result of participation in a wide variety of occupations. Quite obviously, the development of a pulmonary disease process depends upon irritating properties of the inhalant, the amount inhaled, and the period of time over which the individual is exposed to these inhalants. With the advent of a new and evergrowing list of chemicals being produced in modern American industry, it is impossible to determine just how widespread the development of occupational lung diseases is. Some of the most common occupational lung diseases include the various pneumoconioses, hypersensitivity pneumonitis, tracheobronchitis and lung disease secondary to inhalation of irritating gases, and cancer of the lung.

Because of the vast number of occupationally oriented lung diseases and the severity of the vocational implications which result, it is quite likely that rehabilitation professionals will at some point be exposed to this type of disability.

The vocational handicaps and restriction in vocational tasks and worker trait groups associated with the various occupational lung diseases is consistent with that described for chronic obstructive pulmonary disease (see Table 2 (Evaluation of Respiratory Impairment) and Table 3 (Chronic Obstructive Pulmonary Disease) provided in earlier reading assignments; and Chart 2 – provided in a later reading assignment – The Assessment of Damages). The fact that symptoms often do not appear until late in the disease process (as much as 10 to 22 years) often brings the individual into the vocational rehabilitation process in the later stages of career development. This in and of itself can represent significant problems in the vocational rehabilitation process. The trauma of a career crisis in this point in life can represent significant psychological
complications which result in further barriers to rehabilitation.

In addition to the age of the worker with occupational diseases of this nature, it is not uncommon to find that they also represent lower socioeconomic and educational levels. As a result, it is more difficult to transfer past skills to appropriate alternative work and equally difficult to develop formal retraining programs consistent with their aptitudes and educational background. For this reason, in the more severe stages of the occupational lung diseases and most chronic obstructive pulmonary diseases it is not uncommon to find total disability resulting from the combination of lung disease and poor levels of educational background, transferable skills, and overall vocational potential.

**Pneumoconioses**

There are many different forms of pneumoconioses. Included in the pneumoconioses are silicosis, asbestosis, and black lung.

The precipitating factor in each case is the inhalation of dust. The number and types of pneumoconioses will most likely continue to expand as new industrial hazards are created. Exposure to some inhalants of an inert nature may actually result in no damage to the lungs, but unfortunately, this is not often the case. It is important for the physical state and chemical nature of the dust to be carefully evaluated to determine the extent to which it has a potential to create lung damage.

As previously noted, more than 316,000 individuals suffer from some form of pneumoconiosis. As the disease passes through its various stages, the patient will gradually begin to incur more serious functional limitations. In effect, the individual will begin to pass from a Class 1 respiratory impairment through Class 2 and 3, and potentially into Class 4. The associated vocational handicaps and limitations with respect to worker trait groups are consistent with the data listed in Tables 2 and 3 (provided in an earlier reading assignment – The Chronic Obstructive Pulmonary Disease) and Chart 2 (provided in a later reading assignment – The Assessment of Damages).

It is important to keep in mind, however, that the simple diagnosis of
pneumoconiosis does not automatically bring with it permanent and total disability as is often assumed by many individuals who do not understand the progressive nature of the disease process. Many individuals who have been exposed to coal dust (as an example) for only brief periods (three to five years) may have a diagnosis of pneumoconiosis, but fall into a Class 1 or Class 2 respiratory impairment rating. In that instance, permanent and total disability will usually not result. Appropriate vocational rehabilitation which includes removing the individual from any work environment which involves exposure to irritating inhalants may aid in arresting the disease process and avoiding a deterioration to Class 3 or Class 4 ratings.

Quite obviously, the severity of the diagnosed disease process also will have a direct impact on the duration of vocational rehabilitation. In the case of pneumoconiosis, it is, of course, rare and, in fact, quite unlikely that the individual will return to the same or similar kinds of work assuming that previous occupational exposure was the precipitating factor in the development of the disease. However, this is not always the case and it is possible to come across an individual with this diagnosis who can return to similar work. In those rare instances where such return to work is possible and where exposure to irritants is not a hazard, vocational rehabilitation intervention may be limited to career counseling and guidance and supportive counseling involving three to six weeks of time. Individuals who can return to related worker groups (in the sense that they can use some of their previous skills) will require 10 to 26 weeks of rehabilitation intervention. Those who have a more serious level of the disease and/or who require more involved vocational retraining will typically be followed for a 12 to 24-month period.

**Asbestosis**

Asbestosis has received a great deal of attention in the popular literature and daily newspapers because of the large number of asbestosis lawsuits which have been filed. Articles in the *Wall Street Journal* suggest that as many as 30,000 of these suits have been filed since a determination was made that exposure to asbestos was the major precipitating cause of lung disease. It is estimated that in excess of 50,000 such suits will be filed before the litigation begins to plateau.
This disease is characterized by diffuse pulmonary fibrosis and is directly precipitated by prolonged exposure to asbestos dust. Asbestosis represents perhaps the most serious of the occupational lung diseases at least in terms of the widespread potential for exposure. The material (asbestos) is used in literally hundreds of occupations and manufacturing settings. This disease process also spans a prolonged number of years and results in a gradual deterioration of the lungs. The asbestos fibers, which are inhaled gradually become surrounded by fibrous tissue. Over time this fibrous tissue expands, destroying the alveoli or sac-like structures which are responsible for the exchange of oxygen and carbon dioxide. The result is a severe, chronic restrictive pulmonary disease with significant vocational implications. A chronic obstructive pulmonary condition may develop in more severe cases.

**Black Lung**

Perhaps the most common application of the term pneumoconiosis is to the serious respiratory condition found among coal miners exposed to the inhalation of coal dust over a broad number of years. Although this, too, represents a slow and progressive deterioration of lung tissue, only three to five years may be required for the disease process to fully take hold. The patient eventually develops massive lesions made up of dense fibrous tissue containing black coal dust which appears as black dust on an X-ray. This fibrous tissue eventually results in the destruction of blood vessels and a destruction of the bronchi of the affected lobe. The client is characterized by labored breathing, coughing and the production of sputum containing a blackish fluid. Eventually the patient will develop pulmonary heart disease and respiratory failure. There is no cure for coal miners' pneumoconiosis so treatment mainly consists of relieving symptomatology and an attempt at arresting the deterioration of the condition.

**Silicosis**

This particular type of pneumoconiosis is a chronic pulmonary disease precipitated by the inhalation of silica dust. This exposure is common in any form of mining. In addition, manufacturers of
Inhaling these particles results in the development of nodular lesions throughout the lungs. Over time, and with repeated exposure, a progressive deterioration results. The nodules become more enlarged and eventually begin to blend together. This results in the formation of dense masses in the upper portion of the lungs. Both restrictive lung disease and obstructive lung disease usually develop as a result, and the deterioration eventually leads to emphysema. The disease process is slowly progressive in its deteriorating effects and usually spans a period of 10 to 22 years of exposure.

**Hypersensitivity Pneumonitis**

Exposure to inhalant irritants on the job can lead to other problems besides pneumoconiosis. The term hypersensitivity pneumonitis refers to just such a problem where exposure results in inflammation and scarring of lung tissue. Generally, the inhalation of organic dust results in this hypersensitivity reaction which involves the alveoli. The disease may be named after the occupation involved (example: mushroom pickers lung). The result is the development of a fungus infection which gradually destroys the alveoli secondary to the inflammation and scarring previously described. The disease is characterized by coughing, wheezing and difficult or labored breathing.

**Tracheobronchitis**

A condition similar to hypersensitivity pneumonitis develops as a result of inhalation of irritating gases. As with the inhalation of dust, the severity of the disease will depend in large part on the nature of the gas and the duration, as well as intensity of the exposure. The exposure results in tracheobronchitis characterized by coughing, labored or difficult breathing, and chest pain. Permanent vocational handicaps are not necessarily associated with this disease unless exposure continues and/or appropriate treatment is not applied. The eventual development of bronchiolitis obliterans will occur if the disease process is not arrested. In that instance significant vocational handicaps can and will result.

**Cancer of the Lung**
Another serious lung disease process which may be precipitated by exposure to occupational hazards is cancer of the lung (bronchogenic carcinoma). In addition to heavy smokers, other individuals who are at serious risk of developing lung cancer include individuals who may be repeatedly exposed to asbestos, radioactive dust, coal gas, and similar inhalants.

As with other lung diseases previously noted, lung cancer may prove to be asymptomatic throughout much of its course until the later and more serious stages. The specific symptoms which characterize the disease will depend on the location and size of the tumors involved. Early symptoms are characterized by coughing and wheezing. This is a non-productive cough in the early stages of the disease, but may produce a purulent sputum in the latter stages or when secondary infection occurs. Surgical intervention is often necessary and may involve the removal of a portion of the lung, including the tumor and surrounding tissue (lobectomy) or the removal of an entire lung (pneumonectomy). Chart 1 (provided in a later reading assignment – The Assessment of Damages) provides some insight into the surgical cost and average hospitalization time for each of these procedures. In the case of a pneumonectomy, three to six weeks of hospitalization may be required, while a lobectomy requires only 10 to 14 days in most instances. Such surgical procedures are often followed by vocational limitations and handicaps restricting participation in a broad range of jobs and worker groups. The specific group eliminated will depend in large part on the severity of the disease process and amount of lung tissue removed. In addition to surgery, chemotherapy, radiation treatment and immunotherapy are often necessary. The significant side effects which can follow the treatment process can also have serious physical and psychological implications and may further limit vocational potentials. At the very least, such side effects will result in a substantial increase in the duration and cost of vocational rehabilitation intervention, in large part because of the nature and duration of psychological support services required.