

control measures are years ahead of this country, which does not even have coal dust standards in force.

6. The workmen's compensation system in this country—its coverage, benefits, and deterrence—is creaking with obsolescence. A thorough inquiry is needed and serious thought should be given to uniformity. Not only are there irrational or politically inspired differences between states but some states are still mired in a value system of a bygone age. For example, coal miners' black lung disease is not considered work-related by the compensation laws of all states, except Pennsylvania (1965), Virginia (1968), and Alabama. Such human derelicts, spitting up coal dust, struggling for breath, afflicted with emphysema, massive fibrosis, or enlarged heart, are denied workmen's compensation in such states as West Virginia, Kentucky, Ohio, and Illinois. In Kentucky, according to the state's Department of Labor, about 1,400 out of 2,000 mines licensed to do business do not comply with the workmen's compensation law for other mine injuries apart from black lung. Yet,

the present governor and his predecessor have not considered law and order to be applicable to coal operators.

Where does this leave the National Safety Council? Certainly, it does no service to truth and candor to hide the fact that the Council's industrial members and constituency take a strong interest in how far the Council goes in the occupational health and safety area. That interest, to use a mild word, resulted in the Council's being placed in a difficult position regarding the Occupational Safety and Health Act of 1968. Some observers believed that the Council retracted from a relatively positive position on the bill in February to a statement more in consonance with industry's preferences a few months later. For the Council, it is the same old dilemma of "to be or not to be" that has plagued its potential independence in other safety areas. If the Council is to be true to its potential in occupational health and safety, it cannot ignore at least some of the above-noted problems obstructing progress toward more humane working conditions.

LASER BEAM PRECAUTIONS

By **WILLIAM McCULLOUGH**

Collective Agreement & Grievance Officer, Canadian Union of Public Employees,
Ontario Hydro Employees Local 1000, CLC, Toronto, Ont.

Before we consider the hazards and precautions for the safe use of the laser beam, we should understand what it is. The name laser is an acronym for light amplification by stimulated emission of radiation. The original concept was invented by Dr. Townes in 1955. In 1958 Dr. Townes and Dr. Arthur Schawlow gave a paper on how to construct an optical maser. The name maser is an acronym for micro-wave amplification by stimulated emission of radiation. An optical maser is a laser.

In 1960 Dr. Theodore Maiman, a scientist then working with the Hughes Aircraft Company, gave the world's first demonstration of a laser beam. In 1964 Dr. Townes won the Nobel prize for his work on the theory of lasers.

The light that comes from a conventional light source radiates in all directions in waves of varying lengths that reinforce or

cancel each other. Because it is non-directional and of varying wavelengths, it is said to be incoherent. Light from a laser beam travels in only one direction and is all at the same wavelength, so that it reinforces itself and is known as coherent light. Because it travels in one direction in straight lines, it is a very narrow beam.

To obtain a directional beam from an incoherent conventional source of light it must be focused, and even then it soon spreads its beam again. Ordinary light sources are usually heat units such as incandescent lamps, arc lights, etc. In a neon tube the glass walls remain cool but the electrons activate the neon atoms within the glass tube and accelerate them to levels normally found at high temperatures. The atoms of the source material are brought to a continuous excited state and they fall back to normal by losing energy through heat and visible light.