

Workplace exposure to metalworking fluid may cause irreversible lung disease

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Occupational exposure to fluid commonly used in metal machining operations may be related to a rare, irreversible lung disease, according to research presented at the European Respiratory Society's (ERS) International Congress today (28 September, 2015).

Although metalworking fluid is known to be associated with lung diseases involving the immune system, such as asthma and hypersensitivity pneumonitis (an allergic type of pneumonia), this appears to be the first time that exposure to metalworking fluid has been associated with lymphocytic bronchiolitis. In this condition, an overgrowth of immune cells damages the smallest airways in the lung, suggesting an immune system reaction to something inhaled.

Dr Kristin Cummings, a respiratory health specialist from the National Institute for Occupational Safety and Health, US Centers for Disease Control and Prevention, Morgantown, WV, USA, will describe her team's efforts to find the cause of this rare disorder after four cases were diagnosed at a manufacturing facility where metalworking fluid was employed in a number of processes. The researchers interviewed and measured the lung function of 388 workers who worked at the facility.

"Although workplace exposures were generally low, we found that workers with higher workplace exposure to the fluid reported more symptoms than those with less exposure," says Dr Cummings. "However, their lung function was about the same, regardless of exposure levels. The finding of symptoms with normal lung function could mean that

some workers are at risk of developing the disease as well."

Several of the workers with lymphocytic bronchiolitis are now disabled and unable to work, and at least one has required supplemental oxygen. The disease appears to be irreversible, the researchers say.

Many types of bacteria, as well as fungi, grow in metalworking fluid, which is used in metal machining factories worldwide to lubricate and cool metal during cutting, grinding and other metalworking operations. Exposure to such micro-organisms could be responsible for the disease. Dr Cummings said: "We need to examine the bacterial communities, or microbiomes, of the respiratory system and of the metalworking fluid in the workplace and to see whether they are related in order to be able to answer this question. We also believe that repeat [lung function](#) testing of the workforce at regular intervals is needed so that we may determine whether some workers are developing progressive disease."

Work-related lung diseases are often difficult to diagnose, since similar diseases with other known causes may be common in the general population. Additionally, if there is a long period between [occupational exposure](#) and the development of disease, it may be difficult to link a single case to the workplace. Dr Cummings added: "A cluster of unusual [lung disease](#), for which there is no clear explanation, in a workplace is therefore a sign that should alert the medical community to a hitherto unanticipated cause of disease. The recognition of the work-relatedness of lung [disease](#) is important for those who are exposed to similar conditions in the same workplace, and in others worldwide."

"We recommend that microbial growth in metalworking fluid be maintained at the lowest level possible and that airborne exposures be kept as low as possible through the use of mist collectors and other types of exhaust systems. People who work with metalworking fluid and the doctors who care for them should be aware of the possible risks to

respiratory health that are involved," Dr Cummings concluded.

More information: Abstract: Metalworking fluid-associated respiratory morbidity in a production facility with a cluster of lymphocytic bronchiolitis

Provided by European Lung Foundation

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