

What is being done about welding fumes

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By Michael Monheit, Esquire, Monheit Law, PC

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What is being done about manganese exposure causing manganism?

Researchers are still investigating the link between welding rod fumes and manganism. Welding rod litigation has now begun to help those who suffer the ill health effects of welding and manganese exposure.

Efforts are being made to reduce the risk of environmental manganese exposure. In 1994, the U.S. Environmental Protection Agency (EPA) denied a petition by Ethyl Corporation to allow the use of methylcyclopentadienyl manganese tricarbonyl (MMT) in unleaded gasoline, because of health concerns related to the inhalation of manganese fumes (Davis, 1999).

Other environmental laws have been enacted to limit manganese exposure and welding fume toxicity. However, some scientists feel that more needs to be done about manganism and welding fumes. Researchers studying the health effects of welding fumes report a "preponderance of proof for manganese neurotoxicity" even in present-day industrial settings (Iregren 1999).

According to the U.S. Department of Labor Mine Safety and Health Administration, Welding Fumes Sampling is required due to the "potential hazards of welding operations including metal fumes, toxic gases, and ultraviolet and infrared radiation. Fume particles are formed from vaporization of molten metal. They are very fine in size, generally one micron or smaller, and may join together to form larger particles. Welding fumes can be sampled by drawing air through a special filter at a controlled rate.

"The adverse health effects of welding exposure include chronic or acute systemic poisoning, metal fume fever (a short-term painful ailment with symptoms of fever and chills), pneumoconiosis (lung disease due to accumulation of mineral or metallic particles), and irritation of the respiratory tract.

"The welding fumes produced at welding operations depend primarily on the composition of the metals being welded and the welding rods. When the base metal is iron or steel, with welding rods of similar composition, the main component of the welding fume will be iron oxide. When welding on stainless

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steel, welding fumes containing nickel and chromium may be produced. Welding on plated, galvanized or painted metals may generate fumes containing cadmium, zinc oxide or lead. In addition, welding rods can generate fluoride and free silica in the fumes, depending on the composition of the welding rod coating.

"In summary, welding processes may generate many different metal fumes and other toxic components. It is important that the hazards of a welding operation be evaluated properly. Toxic gases that arise in welding include carbon monoxide, nitrogen dioxides and ozone. If welding or cutting operations are conducted in the presence of chlorinated hydrocarbons, such as the form of solvents either on the metals or in the air, hazardous concentrations of phosgene and hydrogen chloride, which are highly toxic irritant gases, may be produced.

"In addition to the health hazards of metal welding fumes and toxic gases, welding operations involve the hazard of burns from flame, arc, molten metal, heated surfaces and also that of metal splatter. ...When personal respiratory protection is required, this may be provided by a supplied-air welding hood or, when the components and concentration of the fume are known, by a filter-type respirator with filter for protection against welding fumes. It is preferable, of course, that adequate ventilation be provided so as to make the use of respirators unnecessary.

"When sampling for welding fumes, the inspector will use a filter cassette placed on the collar or shoulder so that it is beneath the helmet when the helmet is placed down. The sampling pump is fastened to the belt. Samples [for welding fumes] may be full shift or short-term. Short-term samples may be taken to evaluate toxic [welding fume] components which have short-term limits. In addition, the inspector may sample for toxic gases such as ozone, nitrogen oxides or phosgene. It is important that the welder carry out the welding operation in a normal way, so that an accurate evaluation of the exposure can be made. The inspector will attach and remove the filter cassette and pump as required.

"Normally, good local or general ventilation is required to control exposures to the metal welding fumes and gases of welding operations. The most effective control is local exhaust ventilation in which an exhaust hood is placed near the welding arc or flame, and the 'welding fume contaminants' are drawn away from the welder's breathing zone. The system may consist of moveable exhaust hoods, flexible and stationary ducts, a powered fan, and a welding fume or dust collector. Exhausted air containing welding fumes should be discharged to the outdoors, if possible. It is important that, during the welding operation, the exhaust hoods are placed or set so that welding fumes are not drawn across the worker's face or into the breathing zone. Good general ventilation should be provided. Welding in confined spaces, such as tanks, cabs of mobile equipment and large shovels, may be especially hazardous and require additional ventilation to reduce welding fumes."

<http://www.msha.gov/S&HINFO/HHICM10.HTM>Citation as of 11-15-2004.

Frequently Asked Questions about welding rod injuries from Manganese exposure

By Michael Monheit, Esquire, Monheit Law, PC

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What is Manganism?

Manganism is a central nervous system disease caused by manganese exposure, a toxic element commonly found in welding rod fumes. Symptoms of manganism resemble those of Parkinson's disease, including slurred speech, trembling hands and an unsteady gait.

Can welding rods cause someone to have manganism?

Manganism is caused by long-term exposure to high levels of manganese toxicity, typically as a result of inhaling fumes or dust that contain the material. Frequently, people who work with welding rods, or near people working with welding rods, inhale fumes that contain poisonous manganese materials.

What is the connection between welding rods and manganism?

Welding rods contain a high concentration of manganese toxicity. When heated, the manganese in the welding rod releases toxic fumes that are inhaled by the welder and others who might be nearby. Welders show a higher-than-normal average of manganese exposure and, consequently, manganese poisoning.

I'm not a welder. Am I at risk for manganese poisoning?

Although investigation surrounding manganism has focused on welding rods, there are several other sources of manganese toxicities in the environment. On-the-job manganese exposure occurs mainly in mining, alloy production, processing, ferro-manganese operations, and work with agrochemicals. People living near construction sites, or other locations where welding rods are being used, may also be at risk.

What should I do if I am suffering from welding rod manganism?

Consult your doctor if you believe you may be suffering manganese poisoning. Make sure that your doctor is aware of the similarities between manganism and Parkinson's disease. If you, or someone you love, has been diagnosed with Parkinson's, talk to your doctor about the possibility of manganese exposure. Some doctors may not be aware of the risk associated with manganism. You may wish to consult a specialist who is familiar with manganism, its symptoms and its treatment.

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Is there a test for manganese toxicity?

Yes. Doctors working with patients who have manganism can administer a test to determine the extent of manganese poisoning, as well as the likelihood that the illness is the result of manganese exposure.

Can anything be done to cure the health effects of manganism?

Not yet. The disease can, however, be managed to some extent; although, like Parkinson's disease, there is no known cure at this time. Manganism is considered a chronic condition, in that it remains with the sufferer for the rest of his or her life.

What are my welding rod litigation rights on manganese exposure?

Courts have begun to award damages to those plaintiffs who can demonstrate that their health issues are the result of manganese exposure and toxicity.

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