

IARC Classification Change Statement

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In August of 2018, the International Agency for Research on Cancer (IARC) published its Volume 118 Monograph, wherein they stated that they have determined that welding fumes and ultraviolet radiation from welding are carcinogenic to humans (Group 1). IARC had previously classified welding fumes as “possibly carcinogenic to humans,” Group 2B, in 1989. According to IARC, welding fumes cause cancer of the lung and positive associations have been observed with cancer of the kidney. Also according to IARC, ultraviolet radiation from welding causes ocular melanoma. IARC identifies gouging, brazing, carbon arc or plasma arc cutting, and soldering as processes closely related to welding.

The agency indicates in its monograph that the new classification is based on evidence from case studies and experimental research. According to the agency, cofounders such as asbestos exposure and tobacco use were determined to be inadequate to account for all of the excess risk indicated.

In accordance with sound welding practice, exposure controls must be considered and implemented where welding takes place. Adequate ventilation, including the use of local exhaust ventilation, continues to be required. Unless exposure levels are confirmed through properly conducted industrial hygiene assessments to be below the applicable limits, respiratory protection is required when welding. When choosing respiratory protection, ensure that it provides protection commensurate with the levels of employee exposure. In many cases, the use of positive pressure options like supplied-air or Powered Air Purifying (PAPR) systems may be necessary in order to provide an adequate level of protection. In addition to proper ventilation, other considerations might include changing the welding process or procedure to reduce the rate of fume production where this option is consistent with the welding application requirements.

Lincoln Electric continues to recommend that exposures in the workplace be controlled to levels below the TLV or the applicable regulatory exposure limit standard, whichever is the more conservative. As always, Lincoln Electric will continue to work with its customers to provide the solutions they need to weld safely and effectively.

Frequently Asked Questions

1. What changed?

The International Agency for Research on Cancer (IARC) adopted a revised classification for welding fume in its Volume 118 monograph publication.

In the publication, IARC stated that they have determined welding fumes and ultraviolet radiation from welding are carcinogenic to humans (Group 1). IARC had previously classified welding fumes as “possibly carcinogenic to humans,” Group 2B, in 1989.

In addition, according to the IARC monograph, welding fumes cause cancer of the lung and positive associations have been observed with cancer of the kidney. They also state that ultraviolet radiation from welding causes ocular melanoma.

2. Why did IARC decide to make these changes?

The agency indicates in its monograph that the new classification is based on evidence from case studies and experimental research, including information not available prior to the 1989 classification. According to the agency, cofounders such as asbestos exposure and tobacco use were determined to be inadequate to account for all of the excess risk indicated.

3. Who is IARC?

The International Agency for Research on Cancer (IARC) is an intergovernmental agency that is part of the World Health Organization (WHO) of the United Nations. Its role is to examine and direct research into the causes of cancer, worldwide. Its Monographs Program is designed to evaluate and assess research into the environmental causes of cancer in humans. IARC has its own governing council with 25 member countries currently participating.

4. What exactly are the monograph classifications under IARC?

IARC working groups classify agents, mixtures, and exposures in to one of five categories:

- Group 1: The agent is carcinogenic to humans
- Group 2A: The agent is probably carcinogenic to humans
- Group 2B: The agent is possibly carcinogenic to humans
- Group 3: The agent is not classifiable as to its carcinogenicity in humans
- Group 4: The agent is probably not carcinogenic to humans

5. Does the IARC classification change impact welding workplace regulatory requirements?

No, a change in IARC classification does not directly result in a change in legal or regulatory requirements as it relates to occupational welding activity. However, the change may influence future regulatory or recommended exposure limits applicable to welding fume and exposure to ultraviolet radiation. Employers may need to consider making updates to their hazard communication program and related workplace personal protection and hazard training. In addition, manufacturers and distributors will need to update documentation such as product Safety Data Sheets to reflect the changes where applicable.

6. Should we make any changes in our welding processes as a result of this new IARC change?

Welding operations should continue to be evaluated for opportunities to further reduce workplace exposure potentials with respect to airborne welding fume. These might include: a

change in the welding process or procedure to reduce the rate of fume production where consistent with application requirements, the use of engineering controls such as local exhaust ventilation, work practice improvements and work process design changes. Whenever these efforts are inadequate to maintain control of exposures to below applicable exposure limits, adequate respiratory protection shall be utilized. Adequate respiratory protection methods may include the use of positive pressure options like supplied-air and Powered Air Purifying (PAPR) systems.

7. What if we still have questions?

If you need any assistance, you can contact your Lincoln Electric local sales representative or the Lincoln Electric Corporate EHS Department. Direct inquiries can be addressed to [Lincoln Electric Customer Support](#). Lincoln will continue to work with customers to develop the solutions they need to weld effectively while meeting applicable exposure limit requirements. To learn more about the IARC Monograph, Volume 118, visit <https://monographs.iarc.fr/>.

8. Where can I find more Information?

Please consider consulting the following references for more details:

- Official IARC webpage: <https://www.iarc.fr/>
- The OSHA Information page on welding: <https://www.osha.gov/SLTC/weldingcuttingbrazing/>
- The Effects of Welding on Health II, The American Welding Society (AWS): https://pubs.aws.org/content/free_downloads/EWH-II.pdf