

ACGIH Threshold Limit Values for Benzene (2024) – Compliance Considerations

The Department of Digital Government and Service NL's, Occupational Health and Safety (OHS) Division, automatically adopts Threshold Limit Values (TLVs) from the American Conference of Governmental Industrial Hygienists (ACGIH).

Common TLV categories include ceiling limit (C), short-term exposure limit (STEL), and time-weighted average limit (TWA). Section 42(7)(d) of the Occupational Health and Safety Regulations, 2012, states that an employer shall ensure that, "except as otherwise determined by the division, a worker is not exposed to a substance that exceeds the ceiling limit, short-term exposure limit or 8-hour TWA (time-weighted average) limit prescribed by ACGIH".

Since 1946, the ACGIH has published a TWA for benzene. By the 1960s the limit had been reduced from 100 parts per million (ppm) to 25 ppm. As updated epidemiological and toxicological data became available, the limit was reduced again in 1977 when benzene was designated by the International Agency for Research on Cancer (IARC) as a "suspected human carcinogen." As epidemiological evidence evolved, the IARC designation changed to "confirmed human carcinogen" and the limit was again decreased to 0.5 ppm in 1997. At that time a STEL of 2.5 ppm was also adopted.

In January 2024, the ACGIH reduced the TWA for Benzene to 0.02 ppm and eliminated the STEL. The newly adopted limit is intended to minimize the potential for bone marrow toxicity and other adverse health outcomes including myelodysplastic syndrome, acute myeloid leukemia, leukemia, hematologic effects, and chromosomal damage. In addition, the ACGIH assigned a skin notation to benzene to identify skin absorption as an exposure route. Please consult ACGIH documentation for further information.

The new TWA will impact various industries throughout the province. The OHS Division recognizes that employers will need time to conduct further risk assessments and monitor the exposure of workers who were previously considered protected. OHS Officers and Industrial Hygienists will continue to enforce the 1997 TWA and STEL for benzene (0.5 ppm, and 2.5 ppm respectively) until September 30, 2024. In the interim, industry is encouraged to evaluate worker exposure in relation to the 2024 TWA and skin notation, as it may be necessary to use additional control measures and personal protective equipment.

On September 30, 2024, the OHS Division will provide an update on the status of enforcement practices for benzene.