

## **VRT to benzene: advancing and protecting occupational health in the exposome era**

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**Introduction:** The 21st century has highlighted a socio-environmental dilemma resulting from the unsustainable use of natural resources, such as fossil fuels, prioritizing the reproduction of capital over the preservation of workers' health and the health of society as a whole. This context underscores the importance of a global pact for life, focused on environmental preservation, technological adaptation, and societal health. Within this agenda, controlling benzene exposure is fundamental, especially due to its carcinogenic and hematotoxic properties. Preventing exposure to this substance is a priority. This work addresses the regulation of benzene exposure in Brazil, highlighting advances and challenges in protecting workers' health. **Objective:** To analyze regulatory standards related to benzene exposure, assessing their effectiveness in preventing occupational diseases. Additionally, to evaluate the relevance of the Technological Reference Value (VRT) in safeguarding workers' health. **Methodology:** A document review was conducted on Brazilian regulatory standards, including Annex 13-A of NR-15 and NR-7, as well as epidemiological studies on the effects of benzene exposure. Furthermore, foreign regulations and recommendations were analyzed. **Results and Conclusions:** The control of benzene emerges as part of global efforts to mitigate the socio-environmental impacts associated with the petroleum industry. The results indicate that, although some countries establish occupational exposure limits (OELs) for benzene, there are truly no safe levels for carcinogenic substances. Maintaining and continuously improving the VRT is essential to ensure workers' protection. Collaboration among the government, employers, and workers is crucial for advancing regulation and promoting workplace health. Reactivating the Permanent National Benzene Commission is recommended to enhance inter-institutional debate and strengthen public policies.