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To monitoring air quality in ORs, portable direct reading instruments and sample collection device methods are utilized. For instance, a photo-acoustic infrared spectrometry analyzer has been used for direct reading of halogenated and N2O in ORs.10 Time-integrated air samples could be collected either by adsorption tubes connected to a pump or by passive dosimeters.9

Different values have been set as OELs of anesthetic gases. For example, NIOSH recommended that the concentration of a halogenated anesthetic agent during its administration should be less than 2 ppm if it is used alone or below 0.5 ppm if it is used in combination with nitrous oxide. The NIOSH REL for N2O is 25 ppm.5,11 At present, OSHA does not have PEL for anesthetic agents. ACGIH has set TLVs only for enfurane, halothane, and nitrous oxide as 75, 50, and 50 ppm respectively. The Iran Ministry of Health and Medical Education has set OELs of desflurane and sevoflurane as 20 ppm; N2O, isoflurane and halothane as 50 ppm; and enfurane as 75 ppm. It seems that in the absence of any TLV (by ACGIH) or PEL (by NIOSH) for isoflurane, desflurane and sevoflurane and considering the REL of 2 ppm for any halogenated anesthetic agents, the Iran OELs of desflurane, sevoflurane, and isoflurane might be used with caution. It is worth mentioning that in ORs of Iran, N2O is commonly used in combination with isoflurane and sevoflurane. Therefore, the reduction in OELs of these halogenated agents, similar to NIOSH REL, would be proposed. The OEL of halothane could also be in the forefront of change, since the hepatotoxicity of this agent has been reported.12

As a conclusion, the occupational exposure to anesthetic waste gases should be monitored periodically to protect the personnel of ORs and in the assessment of monitoring results, specific attention should be paid to concurrent use of N2O and halogenated anesthetic gases. Importantly, in the future, the revised OELs by Iran Ministry of Health and Medical Education the concerns addressed here would be considered helpful.

References