

Impact of methyl bromide on earth's atmosphere

Methyl bromide (MeBr), with an estimated ozone depleting potential (ODP) of 0.7, was classified as an ozone depleting substance in 1992. While research to find alternatives to MeBr – used as a fumigant – has continued, other scientists are examining the contribution of this compound in depleting the ozone layer. MeBr is also liberated into the atmosphere from natural sources and efforts are being made to determine the ratio of atmospheric MeBr from natural as well as human sources.

Oceans are the largest source of methyl bromide and the second largest sink. According to a study by Mr. Shari Yvon-Lewis, NOAA Atlantic Oceanographic and Meteorological Laboratory, the ocean acts as a net sink, with a possible measurement ranging from 3,000 to 32,000 t/y. However, many factors influence the amount of MeBr emitted and absorbed by the oceans. The circulation patterns of the ocean, amount of precipitation and water temperature all affect the delicate balance. By comparison, the contribution of MeBr used as a fumigant is reported to be about 60,000 t/y, with 26,000 t/y coming from soil fumigation.

The magnitude of sinks is not completely understood. Mr. Yvon-Lewis estimates that oceans take in 77,000 t/y, OH reactions and ultraviolet radiation destroy about 86,000 t/y and soils take up almost 47,000 t/y. Scientists have as yet not been able to balance the equation consisting of known sources, known sinks and measured MeBr in the atmosphere. A big unknown at this point is how much MeBr plants produce and how much they take up and destroy. Some research indicate that the global emission rate of the rapeseed plant is 7,000 t/y. Wetlands contribute an additional 4,500 t/y to the total global emission budget. (Website: www.ars.usda.gov)