United States Department of the Interior

U.S. GEOLOGICAL SURVEY
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IN REPLY REFER TO:

NATIONAL WATER QUALITY LABORATORY TECHNICAL MEMORANDUM 1998.06

April 28, 1998

Subject: Elimination of Acrolein from NWQL Schedules 2020, 2021 and Deletion of Schedule 1401

Effective date: April 30, 1998

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Revision: None

Supplemental: None

SCOPE

This technical memorandum pertains to the elimination of acrolein (WATSTORE Code 34210, CAS (Chemical Abstract Service) number 107-02-8) from National Water Quality Laboratory (NWQL) schedules 2020, 2021, and deletion of schedule 1401, due to an equipment change. The ability to consistently detect acrolein changed since the installation of new purge and trap concentrators in October 1997. Therefore, acrolein will be eliminated as a routine constituent of volatile organic compound (VOC) analyses as of April 30, 1998. All current and existing data reports and database results for acrolein are correct and do not require updates or adjustments.

BACKGROUND

In October 1997, the VOC instruments were updated with a Tekmar 3000 purge and trap concentrator and an Archon autosampler. The equipment was installed on the first instrument October 2 and on the second instrument October 15, 1997. The new concentrator has an improved design, including a moisture control module to remove interfering water vapors. Removal of the water vapor improves analytical performance for a substantial number of VOCs. Unfortunately, most of the acrolein is removed along with the excess water.

NWQL schedules 2020, 2021, and 1401 offer acrolein at minimum-reporting levels of 1.4, 1.4, and 20 micrograms per liter (ug/L), respectively. Preliminary results from the new VOC concentrators suggest that minimum-reporting levels for acrolein may need to be as much as 5 to 200 times higher than previous minimum- reporting levels. Performance of acrolein is extremely inconsistent compared to previous performance without moisture control modules (Connor and others, 1998).

Now that it is certain that detection capability and reliability is significantly degraded for acrolein with the current instrument configuration, NWQL no longer offers acrolein as a routine VOC. Acrolein will be deleted as a constituent from schedules 2020, 2021. In schedule 2020, if acrolein is positively identified, it will be reported with a semiquantitative concentration and as a nonselected compound. Schedule 1401, which reports acrolein and acrylonitrile, will be deleted.

Acrolein will be available through a local contract laboratory. Contact Ann Mullin (303-467-8235) for contracting information. Acrylonitrile, part of the deleted schedule 1401, will therefore be added to schedules 1380, 1390, and 1392 with a minimum-reporting level of <2.5 ug/L.

VOC results submitted to the database after the installation of the new autosamplers (October 15, 1997) have minimum-reporting levels of up to less than 500 ug/L. If the detection capability was unknown, the acrolein results were deleted. Analyses completed before October 15, 1997, remain valid and used default minimum-reporting levels of 1.4 ug/L for schedules 2020 and 2021, or 20 ug/L for schedule 1401. All data reports, both before and after October 15, 1997, include any positive detections of acrolein as found.

EFFECT ON DATABASE

Results for acrolein in NWQL schedules 2020, 2021, and 1401 submitted before and after October 15, 1997, are correct in the database and do not need updating. Acrolein results collected from the new instruments will exhibit delete codes or higher minimum-reporting levels (up to 500 ug/L) because of the increased variability in the data and the decreased detection capability. No updates to acrolein in the database are required because results were submitted reflecting the individual changes in detection capability per analysis. Acrolein will be eliminated from schedules 2020 and 2021, and schedule 1401 will be deleted as of April 30, 1998. Acrylonitrile will be added to schedules 1380, 1390, and 1392 as of April 30, 1998.

For more information contact the following Website: http://wwwnwql.cr.usgs.gov/. At this site, click on Schedule 2020, SPiN, QC Sets, or Technical Memoranda for information about LS 2020, 2021, and LS 1401.

REFERENCES

Connor, B.F., Rose, D.L., Noriega, M.C., Murtagh, L.K., and Abney, S.R.,1998,Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of 86 volatile organic compounds in water by gas chromatography/mass spectrometry, including detections less than reporting limits: U.S. Geological Survey Open-File Report 97-829.

/signed/
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Supersedes: None

Key Words: Acrolein, VOC, schedule 2020, schedule 2021, schedule 1401, Detection capability, Minimum-reporting level, MRL

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