REGION VIII PRETREATMENT GUIDANCE ON THE ANALYSIS OF BTEX

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The analysis of total BTEX (benzene, toluene, ethylbenzene and xylenes) is often required of industrial users discharging petroleum contaminated groundwater to municipal wastewater treatment plants. Monitoring performed under the Pretreatment Regulations (40 CFR Part 403) must be in accordance with methods specified under 40 CFR Part 136. Analytical methods for the analysis of benzene, toluene, and ethylbenzene are specified in 40 CFR Part 136. However, there are no methods approved under 40 CFR Part 136 for the analysis of total xylene. EPA Region VIII recognizes that the analytical methods specified in 40 CFR Part 136 for benzene, toluene, and ethylbenzene are valid methods for the analysis of total xylene. The concentration of benzene, toluene, ethylbenzene, and total xylene must be added together to obtain a value for total BTEX. Total xylene is represented by three isomers (commonly referred to as meta- para- and ortho- xylene). The concentration for the three isomers are added together to obtain a value for total xylene. 40 CFR Part 136 methods will not provide adequate resolution to separate meta- and para- xylene. Therefore meta- and para-xylene will be represented by a single value. Total xylene is then computed by adding the concentration of ortho-xylene to the concentration representing both meta- and para-xylene.

The following table is a summary of methods approved under 40 CFR Part 136 (as of March 1, 1993) for the analysis of benzene, ethylbenzene, and toluene.

Parameter	EPA Approved Methods
benzene	EPA Methods 602, 624, 1624 Standard Methods 17th Edition 6210 B, 6220 B
toluene	" "

ethylbenzene " "

(OVER)

The EPA Region VIII Pretreatment Program recommends the use of the above methods for the analysis of total xylene.

BTEX samples must be collected as grab samples. A minimum of four samples collected over the duration of discharge during a 24-hour period should be collected to represent a 24-hour composite sample. If a discharge occurs in under a 24 hour period, the grab samples should be collected over the discharge period and ensure that samples are representative of the discharge. Samples must be collected in glass containers with Teflon lined septa. The required sample volume may vary from lab to lab. A minimum sample volume of 40 ml is common. The sample container must be filled just to overflowing in such a manner that no air bubbles pass through the sample as the bottle is being filled. The sample bottle is then sealed with a screw cap such that no air bubbles are entrapped in it. All samples must be iced or refrigerated at 4 degrees Celsius from the time of collection until analysis. If samples are not going to be analyzed within 7 days, the samples must be acidified to a pH of 2 with hydrochloric acid. Acidified samples must be analyzed within 14 days of collection. As discussed at 40 CFR Part 403 Appendix E volatile pollutant aliquots (such as BTEX) must be combined in the laboratory (proportional to flow) immediately before analysis, if it is necessary to obtain results for a flow proportional composite sample. If the flow is constant, grab samples may be analyzed individually. In this case, the average concentration of the individual samples would be representative of the desired composite sample.