

**Arizona Department of Environmental Quality UST Program  
Release Reporting & Corrective Action Guidance**

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**APPENDIX Q      UST PROGRAM INTERIM POLICY FOR METHYL TERTIARY-BUTYL ETHER (MTBE) IN GROUNDWATER**

Currently, methyl tertiary-butyl ether (MTBE) does not have an established numeric aquifer water quality standard (AWQS) in accordance with A.A.C. R18-11-406 or a federal maximum contaminant level (MCL). The intent of this general guidance is to: provide guidance for the investigation and remediation of MTBE in groundwater; and allow the regulated community to obtain case closure for leaking underground storage tank (LUST) sites that involve MTBE in groundwater. The guidance numbers for MTBE in groundwater contained within this draft document are interim numbers and may be revised by ADEQ due to updated methodologies or the EPA publishing risk-based numbers which may include MTBE possibly being considered a carcinogen.

**GENERAL GUIDANCE:**

- A. The UST Program will require investigation of MTBE to the lowest Tier 1 level that can be used to assess actual or potential impairment of the drinking water source.
  
- B. The UST Program will grant LUST case closure upon the demonstration that the degree of MTBE impact to an aquifer classified for “drinking water protected use,” is either:
  - 1. Treated at the Source  
Reduced through remediation until the human health is not endangered, the surface water standard for a navigable water of the state is not violated, and the use of the aquifer is not impaired;
  
  - 2. Treated at the Point of Exposure Alone or in Combination with Use Limitations Managed using institutional and/or engineering controls<sup>1</sup> to reduce potential health risks posed by exposures to impacted water; or
  
  - 3. Combination of (1) and (2)  
Reduced through remediation to a site specific level allowing for the use of institutional or engineering controls to reduce potential health risks posed by exposure to impacted water.

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<sup>1</sup>Use of an institutional or engineering control requires a Declaration of Environmental Use Restriction to be recorded to the deed of the property for that area of the property subject to the control (A.R.S. § 49-158). Rules and procedures for the implementation and enforcement of these controls are under development.

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### PROCEDURES:

The following procedures can be used to investigate the extent of MTBE contamination in groundwater, and to determine an appropriate site specific remediation level. This will allow the UST Program to grant LUST case closure.

1. MTBE in groundwater is to be investigated to 20 micrograms per liter (ug/L). This level is based on the lower value of the range established by the US EPA for aesthetic taste and odor threshold<sup>2</sup> that is likely to protect sensitive individuals within the general population. By selecting this level, groundwater plumes will be characterized to the lowest potentially applicable cleanup level. This procedure is consistent with the procedure for characterization of soil contamination. When EPA releases its secondary MCL, this policy will be modified to establish the secondary MCL as the investigative level.
2. A receptor survey is to be conducted to identify existing drinking water wells (public or private) and bodies of surface water that may be impacted through seeps, surface runoff, or groundwater. The survey should include the area within a one-half mile radius of the release when conducted prior to completion of contaminant delineation, and within a one-quarter mile radius of the dissolved plume edge upon completion of delineation.
3. To ensure that human health is not endangered, a Tier 1 remedial level of 94 ug/L should be used when an existing drinking water receptor is not affected or is not potentially affected by MTBE. If a drinking water well may be installed in the reasonably foreseeable **future**, the procedure described in paragraphs 5 or 6 may apply.
4. To ensure that the surface water standard for a navigable water of the state is not violated [A.A.C. R18-11-104(C)], impacted surface water should be investigated and remediated to that level which is site-specifically determined to be protective of that designated use of the surface water. In addition to reducing levels of MTBE in secondary sources of subsurface soil and groundwater which impact surface water, the following criteria should be considered in determining the surface water remediation level:
  - a. objectionable odor at the point or area of discharge to the surface water;
  - b. objectionable taste or odor in drinking water which draws all or a portion of the drinking water supply from the impacted surface water;

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<sup>2</sup>

US EPA. 1997. Drinking Water Advisory: Consumer Acceptability Advice and Health Effects Analysis on Methyl Tertiary-Butyl Ether (MtBE). Office of Water, Environmental Protection Agency. EPA-822-F-97-009.

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- c. objectionable taste in aquatic organisms or waterfowl residing in the affected habitat, or in higher trophic levels of the food chain consuming affected aquatic organisms or waterfowl ;
  - d. toxicity to humans, animals, plants, or other organisms; and
  - e. visible presence of a film or iridescence sheen on the surface water.
6. To ensure that the use of the aquifer is not impaired, a Tier 1 remedial level of 20 ug/L should be used when a drinking water well has been affected or has the potential to be affected by MTBE. This remedial guidance level will ensure that the existing or reasonably foreseeable use of an aquifer as drinking water is protected from being “impaired” by MTBE. Although 20 ug/L represents a pre-determined level that is protective of most individuals, additional remediation may be required on a site-specific basis when a highly sensitive receptor is impacted.
7. An alternative Tier 2 or 3 remediation level for MTBE in groundwater may be submitted to ADEQ for approval in accordance with the UST Release Reporting and Corrective Actions rule. If an alternative remedial standard is approved, however, a Declaration of Environmental Use Restriction may be required. In proposing a site-specific remediation level, risk assessment and risk management may be used for that period during which the site-specific AWQS established by this policy is exceeded. A risk assessment would determine, on a site-specific basis, the acceptable level of MTBE which is protective of human health at the site. Based on site-specific conditions, the risk management tools of institutional and engineering controls may be utilized.