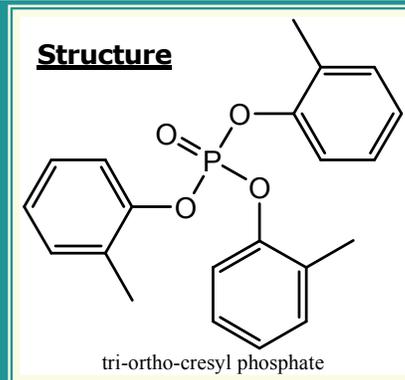


# Procedure for Describing Process for Development of an Analytical Interim Practical Quantitation Levels (PQL)

## Tri-ortho-cresyl phosphate

CAS #78-30-8



- 1) A health-based Interim Specific Ground Water Quality Criterion (ISGWQC), developed by Office of Science toxicologists, is 3 ppb. For additional information, please see the Interim Ground Water Quality Criterion Document for [Tri-ortho-cresyl phosphate](#).
- 2) A Published Methods Database is searched to determine if the requested contaminant is a listed parameter in any analytical method. A variety of different organizations contribute to this database, for example; USEPA, USGS, APHA (Standard Methods), AOAC (Association of Official Analytical Chemists), and NIOSH (Air Methods).
  - a. National Environmental Methods Index (NEMI), is a free, searchable clearinghouse of methods and procedures for both regulatory and non-regulatory monitoring purposes for water, sediment, air and tissues. It is jointly funded by the U.S. Geological Survey and U.S. Environmental Protection Agency
  - b. NEMI is used by Office of Science scientists to compare and contrast the performance and relative cost of analytical methods, review the full text of the procedure to determine implementation, and review sampling methods that require specialized techniques for environmental monitoring.
  - c. In the event that a published method does not exist, a phone survey of the commercial certified laboratory community is performed to determine if the parameter(s) of interest is a listed chemical in a non-routine method.
  - d. A literature search is initiated through the Environmental Research Library within the Office of Science to determine if there are peer reviewed references for analytical capability and performance information.

### **Basis for PQL**

Tri-ortho-cresyl phosphate, and its synonym Tri-o-tolyl phosphate, appears as a listed parameter in two published USEPA methods "1618, Organo-Halide Pesticides, Organo Phosphorus pesticides, and Phenoxy-acid Herbicides by Wide-Bore Capillary Column Gas Chromatography with Selective Detectors, and 8270D Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)." The reported MDL used by both methods is 10 ppb which would calculate to a PQL value of 50 ppb which is above the ISGWQC level of 3 ppb. A laboratory survey and literature review were conducted due to the rather high PQL calculation. The literature survey yielded several peer reviewed references for MDL values of 20 ng/L to routine quantification values from environmental assessments of 0.3 to 4.3 ng/L sensitivity levels. In addition, USGS method O-1423-01 has a reporting limit (RL) of 60 ng/L for the flame retardant Tri-phenyl phosphate which is structurally similar to this parameter. Labelled isotopes of the analyte could be used to further enhance the sensitivity for this parameter. The value of 20 ng/L was selected from this review, and the calculated PQL is 5 X 20 ng/L or 0.1 ppb.

**ISGWQC:** 3 ppb

**Interim PQL:** 0.1 ppb

# Procedure for Describing Process for Development of an Analytical Interim Practical Quantitation Levels (PQL)

## Tri-ortho-cresyl phosphate

CAS #78-30-8

(Continued)

See: National Environmental Methods Index (NEMI) for the published USEPA methods <http://www.nemi.gov/> and the following references for the PQL determination;

- (1) Williams DT, Lebel GL; Bull Environ Contam Toxicol 27: 450-7 (1981)
- (2) Williams DT et al; Chemosphere 11: 262-76 (1982)
- (3) Ishikawa S et al; Water Res 19: 119-25 (1985)
- (4) Takimoto K et al; Atmos Environ 33: 3191-3200 (1999)
- (5) Marklund A et al; Environ Sci Technol 39: 3555-3562 (2005)
- (6) van der Veen I, de Boer J; Chemosphere 88: 1119-53 (2012)

R. Lee Lippincott Ph.D

Office of Science  
3/19/2014