VALUE(S) ADDED 7-24-85

FACT SHEET REVISED 9-6-85

VALUE(S) REMOVED ----------

AMBIENT SURFACE WATER QUALITY STANDARDS DOCUMENTATION

CHEMICAL: Pyrene

CAS NO.(s): 129-00-0

BASIS (Human/Aquatic): Human

WATER CLASSIFICATION: AA; AA-s; A; A-s

STANDARD: 50 ug/l Note E

REMARKS:

SUMMARY INFORMATION:

Polynuclear aromatic hydrocarbons (PAHs) are a class of compounds which contain three or more aromatic rings. PAHs are ubiquitous substances generated from natural sources such as forest fires and volcanoes as well as from human activities, including emissions from coal- and gas-fired boilers, electric power plants, municipal and industrial incinerators and a wide variety of industrial processes. Benzo(a)pyrene, the most thoroughly studied of the PAHs, is an animal oncogen as defined in Part 701.1(p).[1] Other PAHs have also been implicated as oncogens although the data may be less conclusive than for benzo(a)pyrene. Some investigators have proposed that if a characteristic "bay region" exists in the molecule, the PAH can be transformed to a reactive metabolite which is able to react with genetic material.[2] Available oncogenicity and mutagenicity data on PAHs with four or more rings and a "bay region" have generally supported this hypothesis. PAHs with four or more rings and a "bay region" will be considered as potential oncogens unless there are sufficient data to the contrary.

The toxicologic data base for pyrene has been reviewed.[3-5] It is a 4-ring PAH but does not have a "bay region". Although pyrene has shown genotoxic activity in short-term tests,[3-5] it has not shown oncogenic activity in several bioassays under experimental conditions that probably would have detected the oncogenicity of other PAHs.[4]

STANDARD DERIVATION:

Pyrene is a 4-ring PAH but it lacks a "bay region" and the available bioassay data indicate that, under the conditions of the several bioassays, pyrene was not oncogenic. The human health effects data, animal toxicologic data, aesthetic threshold data and chemical correlations data are not sufficient for establishing a specific standard on the basis of Section 701.4 through 701.7. Therefore, the general guideline of 50 ug/l is recommended as the ambient water quality standard for pyrene.

REFERENCES:

(1) N.Y.S. Department of Health. 1984. Documentation for ambient surface water quality standard for benzo(a)pyrene.

(2) Lehr, R.E. *et al.* 1981. The bay region theory: history and current perspectives. *In:* Polynuclear Aromatic Hydrocarbons. Cooke, M. *et al.* (eds.). Batelle Press. Columbus, Ohio. pp. 21-37.

(3) National Research Council (U.S.A.) 1983. Polycyclic Aromatic Hydrocarbons: Evaluations of Sources and Effects. National Academy Press. Washington, D.C.

(4) International Agency for Research on Cancer. 1983. IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. 32: 431-445.

(5) U.S. Environmental Protection Agency. 1980. Ambient water quality criteria for polynuclear aromatic hydrocarbons. NTIS No. PB81-117806.

KB/pb

DEC 84

SEP - 6 1985