NOTICES OF PUBLIC INFORMATION

Notices of Public Information contain corrections that agencies wish to make to their notices of rulemaking; miscellaneous rulemaking information that does not fit into any other category of notice; and other types of information required by statute to be published in the *Register*. Because of the variety of material that is contained in a Notice of Public Information, the Office of the Secretary of State has not established a specific format for these notices.

NOTICE OF PUBLIC INFORMATION

TITLE 18. ENVIRONMENTAL QUALITY

CHAPTER 11. DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER QUALITY STANDARDS

1. **Title and its heading.** 18, Environmental Quality
Chapter and its heading: 11, Department of Environmental Quality – Water Quality Standards
Article and its heading: 6, Impaired Water Identification (Notice of Proposed Rulemaking, August 24, 2001)
Section numbers: R18-11-601 through R18-11-606 (Notice of Proposed Rulemaking, August 24, 2001)

2. **The public information relating to the listed Sections:**

As required under A.R.S. § 49-232(F), the Department is providing an opportunity for public notice and comment on the implementation procedures that specifically identify the objective basis for determining a violation of narrative toxicity standard under A.A.C. R18-11-108(A)(5). The Department is proposing the following *Narrative Toxicity Standard 303(d) Program Implementation Procedures*.

NARRATIVE TOXICITY STANDARD
303(d) PROGRAM IMPLEMENTATION PROCEDURES

Introduction

The Arizona Department of Environmental Quality (ADEQ) adopted a narrative water quality standards for toxic substances, in the Arizona Administrative Code (A.A.C.) R18-11-108(A)(5), which states:

"A surface water shall be free from pollutants in amounts or combinations that are toxic to humans, animals, plants, and other organisms;..."

To implement this narrative standard, ADEQ will use toxicant concentrations in aquatic organisms that present a threat to human health.

The following chapter will contain guidelines for conducting toxicity investigations and implementation decision criteria for the narrative standard. Also, the use of the narrative standard for 305(b) assessment and 303(d) listing will be detailed at the end of each chapter.

Narrative Toxicity Standard Rationale

It is practically impossible to safeguard against the concentration of bioaccumulable toxicants in the tissues of aquatic animals through the use of numeric water quality standards alone. Due to site specific chemical reactions, uptake and excretion kinetics, food web dynamics, and the removal of toxicants from the water column through adsorption by sediments, measured concentrations in the water column are often useless when trying to predict bioaccumulation. Also, toxicants may enter a waterbody episodically, either through runoff or from an intermittent source, making the analysis of water samples a "hit or miss" proposition. Because of these issues, a waterbody may meet numeric water quality standards at the time sampled and simultaneously have impaired designated uses. The analysis of tissue concentrations is the one economically and scientifically feasible method of evaluating threats posed by bioaccumulable toxicants to human and ecosystem health. It is important to note that when toxicants are found to have accrued to hazardous levels, there are very few economical ways to reduce the human health and/or ecological risk in the short term. The hazard may persist, as it has with DDT, for a generation or more.

Triggers

Investigations in support of the narrative toxicity standard as set forth by this guideline may be triggered by:

- toxicant hits found during fish tissue monitoring
- known toxicants without numeric standards that may be found in water samples
- fish kills or terrestrial animal/avian kills associated with a waterbody
- citizen complaints
- toxic spills
- other indications of toxicity found in the course of normal surface water monitoring.

TOXICANT CONCENTRATIONS IN AQUATIC ORGANISMS THAT PRESENT A THREAT TO HUMAN HEALTH

In implementing the narrative toxics standard for the protection of *human health*, the primary approach will be through the analysis of toxicants in the edible tissues of aquatic animals. Samples will be collected with the cooperation of the Arizona Game and Fish Department.

Benchmark Values, Methods and Procedures:

Edible portion tissue samples (e.g., filets) will be collected using the EPA "Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories Volume 1: Fish Sampling and Analysis," Third Edition. EPA 823-B-00-007 (EPA, 1999) and selecting species and number of samples to adequately characterize the selected waterbody

Laboratory analysis shall be performed at a USEPA/ADHS certified laboratory

Data will be reviewed for QA/QC by ADEQ staff

A human health risk analysis will be performed using the appropriate USEPA reference dose (RfD) or carcinogenicity oral slope factor (OSF), or an RfD or OSF specifically developed by State personnel (ADEQ *and* ADHS) on a case specific basis (see EPA 2000b). his risk analysis will consider where available:

- toxicity/carcinogenicity
- toxicant concentration
- species taken
- consumption statistics
- waterbody access

See Appendix A and B for examples of risk analysis procedures and the development of human health screening values for use in situations where consumption data is unavailable.

Once the human health risk analysis is developed, a recommendation will be made by ADEQ staff and reviewed by Arizona Department of Health Services for applicability and efficacy in the protection of human health and the Arizona Game and Fish Department to address sport fishing issues.

If the risk analysis shows that a combination of toxicity/carcinogenicity, access and consumption values and rates present a human health risk (see Appendix A), ADEQ, ADHS and AGFD will jointly issue a press release detailing the risk and decision criteria and notify the public that a consumption advisory will be put in place. (See EPA, 1995. Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories Volume 4: Risk Communication (EPA 823-R-95-001) for examples of the risk communication process)

Applicability in 305(b) assessment and 303(d) listing decisions:

The USEPA recommends that states use fish or shellfish consumption advisories in determining attainment water quality standards and listing impaired waterbodies under section 303(d) of the Clean Water Act (Grubbs and Wayland, pers. com.). The bioaccumulation of toxicants to concentrations that pose a threat to humans is a slow process integrating episodic as well as of chronic occurrences of toxicants. Given this integration over time, for the purposes of the application of these standards to 305(b) and 303(d) listings, the following will be considered adequate for listing:

Human health: A fish consumption advisory arising from a human health risk analysis conducted using, at a minimum, the geometric mean of not less than five individuals each of at least two different species taken from the surface water under investigation.

REFERENCES

ADEQ, 1996. Fixed Station Network Procedures Manual for Surface Water Quality Monitoring. (TM 96-1)

EPA, 1995. Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories Volume 4: Risk Communi-

cation (EPA 823-R-95-001)

EPA, 1999. Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories Volume 1: Fish Sampling and Analysis. Third Edition. (EPA 823-R-99-007)

EPA, 2000. Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories Volume 2: Risk Assessment and Fish Consumption Limits. Third Edition. Office of Water EPA 823-B-00-008

Grubbs, G. and R. Wayland, October 24, 2000. Letter concerning the use of fish consumption advisories as listing criteria.

GLOSSARY

Acute: Having a sudden onset, lasting a short time. Of a stimulus, severe enough to induce a response rapidly. Can be used to define either the exposure or the response to an exposure (effect). For clarity, the length of the exposure (short, medium, or long) and the nature of the effect end point (lethal or nonlethal) should be specified. The duration of an acute aquatic toxicity test is generally 4d or less and mortality is the response measured.

BAF Bioaccumulation Factor: Bioaccumulation is a process by which living organisms, especially those living in water, can collect and concentrate chemicals *both* directly from the surrounding environment (i.e. bioconcentration) *and* indirectly from their food. The BAF is a number that describes bioaccumulation as the ratio of the concentration of a chemical inside an organism to the concentration in the surrounding environment.

BCF Bioconcentration Factor: Bioconcentration is the process by which living organisms, especially those living in water, can collect and concentrate chemicals from the surrounding environment. It includes the effect on an organism's internal concentration as a result of the organism taking up a chemical via the respiratory surface and skin (uptake), moving it internally (distribution), changing it (metabolism) and returning it to the environment (elimination). The BCF is a number that describes bioconcentration as the ratio of the concentration of a chemical inside an organism to the concentration in the surrounding environment. BCFs are usually determined using standard laboratory tests.

Carcinogen: An agent capable of inducing cancer.

Chronic: Involving a stimulus that is lingering or continues for a long time; often signifies periods from several weeks to years, depending of the reproductive life cycle of the aquatic species. Can be used to define either the exposure or the response to an exposure (effect). For clarity the length of the exposure and the nature of the effect end point should be specified. Chronic exposure typically induces a biological response of relatively slow progress and long continuance. The chronic aquatic toxicity test is used to study the effects of continuous, long-term exposure to a chemical or other potentially toxic material on organisms.

log K_{ow}: The log of the1-octanol-water partition coefficient, a predictor of lipophilicity

Oral Slope Factor (OSF): An upper bound, approximating a 95% confidence limit, on the increased cancer risk from a lifetime exposure to an agent. This estimate, usually expressed in units of proportion (of a population) affected per mg/kg/day, is generally reserved for use in the low-dose region of the dose-response relationship, that is, for exposures corresponding to risks less than 1 in 100.

Reference Dose (RfD): An estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. It can be derived from a NOAEL, LOAEL, or benchmark dose, with uncertainty factors generally applied to reflect limitations of the data used. Generally used in EPA's noncancer health assessments.

Toxicity: The degree to which a substance or mixture of substances can harm humans or animals. Acute toxicity involves harmful effects in an organism through a single or short-term exposure. Chronic toxicity is the ability of a substance or mixture of substances to cause harmful effects over an extended period, usually upon repeated or continuous exposure sometimes lasting for the entire life of the exposed organism. Subchronic toxicity is the ability of the substance to cause effects for more than one year but less than the lifetime of the exposed organism.

Uncertainty Factor (UF): One of several, generally 10-fold factors, used in operationally deriving the RfD and RfC from experimental data. UFs are intended to account for (1) the variation in sensitivity among the members of the human population, i.e., interhuman or intraspecies variability; (2) the uncertainty in extrapolating animal data to humans, i.e., interspecies variability; (3) the uncertainty in extrapolating from data obtained in a study with less-than-lifetime exposure to lifetime exposure, i.e., extrapolating from subchronic to chronic exposure; (4) the uncertainty in extrapolating from a LOAEL rather than from a NOAEL; and (5) the uncertainty associated with extrapolation from animal data when the data base is incomplete.

Appendix A

Calculations for State Screening Concentrations for the

Implementing Fish Consumption Advisory Analyses for Non-carcinogens

For a given reference dose (RfD) default screening concentrations (in the absence of actual consumption data from the waterbody in consideration) for the implementation of fish consumption advisory analysis would be calculated using the following formulas:

Subsistence consumption: For Surface Waters where subsistence consumption (average three fish meals per week from an individual waterbody for periods longer than four months) is probable:

$$\frac{\text{RfD (mg/Kg/d) * BW *7/d/wk}}{\text{3 mls/wk * 0.227 Kg}} = \text{SC (mg/Kg)}$$

Regular consumption: For urban lakes, municipal park lakes and other waterbodies classified as "Surface Waters" within municipal boundaries with uncontrolled access:

$$\frac{\text{RfD (mg/Kg/d) * BW * 7 d/wk}}{\text{2 mls/wk * 0.227 Kg}} = \text{SC (mg/Kg)}$$

Sport fishing consumption: For Surface Waters outside of municipal boundaries and/or away from residential areas or with limited or controlled access:

$$\frac{\text{RfD (mg/Kg/d) * BW* 7 d/wk}}{\text{1 mls/2wk * 0.227 Kg}} = \text{SC (mg/Kg)}$$

Where:

SC = Screening Concentration for the initiation of a fish consumption advisory analysis

RfD = Reference does as developed by the USEPA or specifically for the toxicant in question.

BW = Average body weight for the most vulnerable portion of the potentially affected population

7 d/wk = seven days in a week

(N) mls/wk = number of meals consumed per week (1 mls/2wk = 16 g/d, 2 mls/wk = 65 g/d, 3 mls/wk = 97 g/d)

0.227 Kg = weight of filet per fish meal (8 oz.)

It must be stressed that the consumption classification of any waterbody (subsistence, regular or sport consumption) is based on best professional judgement and is subject to change given the completion of a consumption survey or the gathering of other pertinent data. The State is committed to protecting the most vulnerable portions of the population and where significant uncertainty exists, will err on the side of conservatism.

A limited consumption advisory would be issued for a waterbody once an investigation is completed characterizing: a) the available species in the waterbody likely to be taken by fishing; b) the toxicant concentration in at least two size/age classes of the major game species, and; c) the consumption class. These data will be evaluated jointly by the Arizona Department of Environmental Quality, the Arizona Game and Fish Department and the Arizona Department of Health Services and a joint recommendation made.

Appendix B

Calculations for State Screening Concentrations for the

Implementing Fish Consumption Advisory Analyses for Carcinogens

For a given cancer oral slope factor (OSF) default screening concentrations (in the absence of actual consumption data from the waterbody in consideration) for the implementation of fish consumption advisory analysis would be calculated using the following formulas:

Subsistence consumption: For Surface Waters where subsistence consumption (average three fish meals per week from an individual waterbody for periods longer than four months) is probable:

$$\frac{\text{ALR/ OSF (mg/Kg/d) *BW*7d/wk}}{\text{3 mls/wk * 0.227 Kg}} = \text{SC (mg/Kg)}$$

Regular consumption: For urban lakes, municipal park lakes and other waterbodies classified as "Surface Waters" within municipal boundaries with uncontrolled access:

$$\frac{\text{ALR/ OSF (mg/Kg/d) *BW*7d/wk}}{\text{2 mls/wk * 0.227 Kg}} = \text{SC (mg/Kg)}$$

Sport fishing consumption: For Surface Waters outside of municipal boundaries and/or away from residential areas or with limited or controlled access:

$$\frac{\text{ALR/ OSF (mg/Kg/d) *BW*7d/wk}}{\text{1 mls/2wk * 0.227 Kg}} = \text{SC (mg/Kg)}$$

Where:

SC = Screening concentration for the initiation of a fish consumption advisory analysis

OSF = Oral slope factor: An upper bound, approximating a 95% confidence limit, on the increased cancer risk from a life-time exposure to an agent

BW = Average body weight for the most vulnerable portion of the potentially affected population

ALR = Acceptable excess cancer risk level (eg. 10^{-6},10^{-5})

7 d/wk = seven days in a week

(N) mls/wk = number of meals consumed per week (1 mls/2wk = 16 g/d, 2 mls/wk = 65 g/d, 3 mls/wk = 97 g/d)

0.227 Kg = weight of filet per fish meal (8 oz.)

It must be stressed that the consumption classification of any waterbody (subsistence, regular or sport consumption) is based on best professional judgement and is subject to change given the completion of a consumption survey or the gathering of other pertinent data. The State is committed to protecting the most vulnerable portions of the population and where significant uncertainty exists, will err on the side of conservatism.

A limited consumption advisory would be issued for a waterbody once an investigation is completed characterizing: a) the available species in the waterbody likely to be taken by fishing; b) the toxicant concentration in at least two size/age classes of the major game species, and; c) the consumption class. These data will be evaluated jointly by the Arizona Department of Environmental Quality, the Arizona Game and Fish Department and the Arizona Department of Health Services and a joint recommendation made.

3. The name and address of agency personnel with whom persons may communicate regarding the public information:

Name:	Linda Taunt
Address:	Department of Environmental Quality 3033 N. Central Avenue, M0301A-311 Phoenix, AZ 85012-2809
Telephone:	(602) 207-4416 (Metro-Phoenix area) or 1-800-234-5677, ext. 4416 (other areas)
Fax:	(602) 207-4528
E-mail:	taunt.linda@ev.state.az.us

4. The time during which the agency will accept written comments about the public information and the time and place where oral comments or questions may be made:

Date:	Tuesday, September 25, 2001
Time:	Immediately following the 4:00 p.m. public hearing on 303(d) listing

Location: Department of Environmental Quality
3033 N. Central Avenue, Room 1710
Phoenix, AZ 85012-2809

Nature: Public Hearing

Date: Thursday, September 27, 2001

Time: Immediately following the 4:00 p.m. public hearing on 303(d) listing

Location: State of Arizona Building
400 W. Congress, Room 444
Tucson, AZ

Nature: Public Hearing

Date: Tuesday, October 2, 2001

Time: Immediately following the 4:00 p.m. public hearing on 303(d) listing

Location: Game and Fish Department
3500 S. Lake Mary Road
Flagstaff, AZ 86001

Nature: Public Hearing

Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, by contacting the Department's coordinator, Katie Huebner, at (602) 207-4794 (voice) or 1-800-367-3839 (TDD Relay). Requests should be made as early as possible to allow time to arrange the accommodation.

Written comments on the public information will be accepted until close of business on October 5, 2001, and may be directed to the person listed in item #3.

NOTICE OF PUBLIC INFORMATION

DEPARTMENT OF ENVIRONMENTAL QUALITY
UNDERGROUND STORAGE TANKS

1. **Title and its heading:** 18, Environmental Quality
Chapter and its heading: 12, Department of Environmental Quality - Underground Storage Tanks
Articles and their headings: 1, Definitions 2, Technical Requirements
Section Numbers: R18-12-101, R18-12-102, R18-12-250, R18-12-251, R18-12-260, R18-12-261, R18-12-261.01, R18-12-261.02, R18-12-262, R18-12-263, R18-12-263.01, R18-12-263.02, R18-12-263.03, R18-12-264, R18-12-264.01, R18-12-280

2. **The Notices relating to the listed Sections:**
Notice of Rulemaking Docket Opening: 6 A.A.R. 1810, May 19, 2000

Notice of Proposed Rulemaking: 6 A.A.R. 3256, September 1, 2000

Notice of Public Information: 6 A.A.R. 3573, September 15, 2000

Notice of Public Information: 6 A.A.R. 4514, December 1, 2000

3. **The name and address of agency personnel with whom persons may communicate regarding the rulemaking:**
Name: Fredrick D. Merrill

Address: Department of Environmental Quality, Waste Programs Division
3033 N. Central Avenue
Phoenix, AZ 85012

Telephone: (602) 207-4129

Fax: (602) 207-2302

4. The time during which the agency will accept written comments:

Because of confusion that may have existed regarding previously published dates for public comment, ADEQ is extending the close of the rulemaking record to October 19, 2001, and will include in the record all oral comments and written comments postmarked no later than October 19, 2001, and addressed to the person identified in item #3. The Department will also conduct a public hearing to receive oral comments. The date, time, and place for the hearing is:

Date: October 12, 2001

Time: 9:00 a.m.

Place: Department of Environmental Quality
3033 N. Central, Room 1709-1710
Phoenix, AZ 85012