

Date: August 10, 2006

To: Environmental Quality Commission

From: Stephanie Hallock, Director

Subject: Agenda Item H, Rule Adoption: Oregon Air Toxics Program: Benchmarks
August 10-11, 2006 EQC Meeting

Department Recommendation The Department recommends that the Environmental Quality Commission (EQC) adopt the air toxics ambient benchmark concentrations, as presented in Attachment A, as administrative rules.

Need for Rulemaking In this rulemaking, DEQ is proposing to adopt ambient benchmark concentrations for 51 air toxics, based on consensus recommendations from the Air Toxics Science Advisory Committee (ATSAC). Ambient benchmark concentrations are reference values with which air toxics problems can be identified, evaluated, and addressed.

In October 2003 the EQC adopted the framework for Oregon's Air Toxics Program (OAR 340-246-0010 to 0230). The program is designed to protect the health of all Oregonians from toxic air pollutants by complementing the federal hazardous air pollutant program. To achieve this, the Oregon program can evaluate and reduce pollutant releases from a variety of sources in three ways: 1) by looking at individual source categories, such as diesel engines; 2) by working with communities to comprehensively look at multiple air toxics released by many sources in an airshed; and 3) by looking at individual major industrial sources under certain circumstances.

A vital step in establishing the scientific foundation of the program is to adopt ambient benchmarks for each air toxic of concern in Oregon, based on levels protective of human health considering sensitive populations. These benchmarks provide consistent health-based goals, as strategies are developed to reduce air toxics. Benchmarks are expressed as micrograms of a specific toxic compound per cubic meter of air. In practice, ambient concentrations of each air toxic compound will be determined through direct monitoring or through use of an air quality model for comparison to the benchmark concentrations.

Ambient benchmarks are not enforceable regulatory standards, but rather “standard reference values” by which air toxics problems can be identified, evaluated, and addressed. Once adopted, they will allow the Department to better assess the risk to Oregon citizens, provide more certainty to stakeholders, business, and elected officials as to the goals of the program, prioritize future emission reduction strategies, and measure and track progress in protecting human health and the environment from air toxics.

In September, 2004, the Department convened the ATSAC to assist in determining ambient benchmark concentrations. The EQC established criteria for ATSAC members in the 2003 rules and concurred with the Department’s nominations to the committee. The Department’s proposed benchmark values reflect the ATSAC’s consensus recommendation to the Department, and the Department concurs with the ATSAC recommendations. (For more on the ATSAC see Stakeholder Involvement below and Attachments C & D).

Oregon Administrative Rule 340-246-0090(2)(e) requires that once ambient benchmark concentrations for air toxics have been established, as defined in OAR 340-246-0090(2)(a-d), they be adopted as administrative rules. These concentrations will be periodically reviewed and updated to reflect new developments in air science and health studies.

Effect of Rule

This proposal is limited in scope to adopting ambient benchmark concentrations as administrative rules. The ambient benchmarks proposed in this rulemaking will function within Oregon’s existing air toxics program (per OAR 340-246-0010 to 0246) as triggers and goals for other facets of the program. Three separate actions could be triggered under the Toxics Program if monitoring data shows ambient air toxic levels above a benchmark. These include: a) the development of emission reduction strategies for specific emission source categories (like diesel engines or woodstoves), b) an evaluation of a major industrial facility under the “Safety-Net” program, or c) community planning work in select geographic areas.

Under the geographic program DEQ must, within 18 months of benchmark adoption, select the first geographic area to focus on for community toxics reduction planning, and begin prioritizing other geographic areas in the state in terms of air toxics risk. The timing of initiating toxics reduction plans in a selected area will depend on available Department resources.

EQC Authority These rules are being proposed for adoption as required under Division 246 of the Oregon Air Toxics Program. The EQC has authority to take this action under ORS 468A.025.

Stakeholder Involvement When the Oregon State Air Toxics Program was adopted by the EQC, DEQ was required to form, with the concurrence of the EQC, an Air Toxics Science Advisory Committee. The purpose of the ATSAC is to provide DEQ, and in Lane County the Lane Regional Air Protection Agency with advice on the state air toxics program that is scientifically and technically sound, independent, balanced, useful, and timely. A seven- (later six-) member ATSAC was formed in September 2004. Members were selected for their relevant air toxics experience in: toxicology; environmental science or engineering; risk assessment, epidemiology and biostatistics; public health medicine; and air pollution modeling, monitoring, meteorology or engineering. At present, two members are from the academic sector, two from state government, and three from the industrial (consulting) sector.

The ATSAC focused initially on reviewing and making recommendations regarding ambient benchmark concentrations proposed by DEQ. In public meetings held approximately every month between September 2004 and December 2005, the ATSAC reviewed benchmarks for 59 air toxics considered to be a priority in Oregon. ATSAC reached consensus on a total of 51 ambient benchmark concentrations (benchmarks were not proposed for the other eight due to current limitations in available toxicological information, a lack of emissions in Oregon, or redundancy with another benchmark). The 51 proposed benchmark values are listed in Attachment A.

In performing their work, the ATSAC relied upon credible information from a variety of peer-reviewed and technical documents, the most important being those from the: (1) U.S. Environmental Protection Agency's Integrated Risk Information System (IRIS), (2) California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (CalEPA OEHHA), and (3) U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (ATSDR).

Public Comment **Technical Meetings:** Between September 2004 and May 2006, the ATSAC held 17 publicized meetings on the technical aspects of benchmark development. All of these meetings were open to the public and a portion of each meeting was set aside to receive verbal comments from the public. One to six people were typically in attendance. During this period, approximately six individuals offered verbal comments and

five written comments were submitted during this period. Responses to these comments (if required) were included in on-going ATSAC deliberations and were reflected in subsequent development of benchmarks. Copies of all written comments are available upon request.

Public Information Session: Following release of the proposed rule, LRAPA invited the Department to hold two, two-hour public information sessions in Eugene on March 22, 2006. Eighteen individuals signed the attendance sheet for the two sessions. Attendees were invited to submit written comments on the rule and approximately six did so.

Public Comment Period: The Department provided a public comment period for the proposed rules, from February 7, 2006 to April 25, 2006. The Department received 105 written comments from 42 individuals or organizations.

Public Hearings: Public hearings were held in Portland on March 28, 2006, in Medford on March 29, 2006, and in Bend on March 30, 2006. One person testified at the hearing in Portland (six attended) and two at the hearing in Medford (six attended). Two individuals attended the hearing in Bend but no one testified.

Key Issues

Of the 51 air toxics for which benchmarks are being proposed, only a few garnered numerous or substantial comments during the ATSAC meetings, public information session, public comment period, and public hearings. DEQ's response to the key issues raised in these comments is summarized below. Attachment B, "Summary of Public Comments and Agency Responses", provides further details of the public's input, Department responses, and corresponding rule changes.

Diesel Particulate Matter (DPM): Determination of an ambient benchmark concentration for particulate emissions from diesel (internal combustion) engines was a particularly difficult task. Numerous studies have connected pollutants released by diesel fuel combustion with serious human health effects. Views differ, however, about how to quantify the relationship between these emissions and the adverse health effects they cause. There are also substantial problems associated with a complex, ever-changing mixture that is difficult (at present) to accurately measure in the environment. Because of diesel's importance as a public health issue, however, the Department requested that the ATSAC establish a benchmark for DPM that acknowledged its cancer-causing potential, was within the range of values from scientifically credible sources, would reflect its importance as an air toxic of concern in Oregon, and would

support goal setting and progress tracking for Oregon's on-going diesel source control strategies. For two full meetings, ATSAC discussed the many issues influencing the setting of a diesel benchmark value. Before recommending a benchmark value, the ATSAC anticipated and discussed all of the issues subsequently raised during the comment period by both industry and environmental groups.

The Department received a number of comments on the proposed diesel benchmark, and discussed these with the ATSAC. Some comments recommended lowering the benchmark and others recommended raising it or eliminating it. After considering all comments, the ATSAC concluded that no new information had been presented on this issue and unanimously recommended continuing with their initial recommendation for a diesel benchmark value.

It is also important to recognize that the ATSAC has set separate benchmarks for many of the most active cancer-causing ingredients in diesel emissions. These other benchmarks should be considered collectively as the basis for a broad, health-based response to the diesel issue.

Benzene: Several commentors criticized DEQ and the ATSAC for choosing a benchmark for benzene that was at the high end of the range of possibilities suggested by U.S. EPA. In response to these comments, DEQ asked the ATSAC to reexamine the available scientific information. The ATSAC's discussion reflected recognition of the carcinogenicity of benzene as demonstrated by numerous epidemiological studies, as well as the scientific uncertainty that exists as to its actual cancer potency. In other words, health research shows that benzene exposures can cause cancer, but there is some uncertainty as to the concentration in air required to trigger a cancer event. Given this uncertainty, ATSAC found the commenters' arguments compelling and unanimously recommended lowering the benchmark for benzene (from the originally proposed $0.45 \mu\text{g m}^{-3}$ to $0.13 \mu\text{g m}^{-3}$) so that it was consistent with the value used by U.S. EPA's Office of Air Quality and Planning Standards. As this lower value is consistent with that used by U.S. EPA's 1999 National Air Toxics Assessment and that used by the Portland Air Toxics Assessment (PATA), reverting to it will not change the number of areas of the state that exceed the benchmark.

Formaldehyde: Public comments reflect a disagreement between

industry and environmental groups over formaldehyde's cancer-causing effects. Two studies, a 1991 U.S. EPA study and a 1999 industry-sponsored study, provide significantly different results regarding formaldehyde's cancer potency. The two studies use different risk assessment methods to arrive at a cancer potency value, with the industry value more than one thousand times less potent. At this time, the degree to which formaldehyde is a cancer-causing chemical is unclear; however, non-cancer effects, such as respiratory tract tissue damage, are well understood. Therefore, the ATSAC recommended setting an initial formaldehyde benchmark based on non-cancer effects, until such time as future research clarifies formaldehyde's cancer risk. In response to public comments, the ATSAC reviewed their initial recommendation and decided, because no new information was made available, to leave the non-cancer benchmark value unchanged. Under Oregon's program, benchmarks must be reviewed and updated (as new scientific information becomes available) every 5 years. It is hoped that new research will be available by then to inform the question of formaldehyde's potential to cause cancer.

Tetrachloroethylene: The ATSAC had established its original benchmark for this air toxic (also called perchloroethylene, PERC, PCE, or dry cleaning fluid) on the basis of its cancer-causing abilities. Requests were made at two public hearings and in written comments that this air toxic not be classified or regulated as a carcinogen and that its benchmark be based on its non-cancer effects. A considerable amount of credible, peer-reviewed scientific literature was submitted illustrating the lack of demonstrated cancer effects in humans. Despite numerous toxicological and epidemiological studies, there is no clear evidence that cancer is an appropriate toxicological endpoint (measure) for tetrachloroethylene effects in humans. In light of this information, the ATSAC reviewed its initial recommendation for tetrachloroethylene and recommended a revised benchmark based on its demonstrated non-cancer effects.

ATSAC Membership: Some commentors were critical of the fact that the ATSAC membership includes consultants that work for the industrial sector. The purpose of the ATSAC is to provide DEQ with scientifically and technically sound, independent, and balanced advice on the state's air toxics program. Members were selected (per the air toxics rule) for their relevant experience in toxicology, environmental science or engineering, risk assessment, epidemiology, biostatistics, public health medicine, and air pollution modeling, monitoring, meteorology or engineering. At present, two members are from the academic sector, two from state government, and three from the industrial (consulting) sector. The

ATSAC, chaired by Dr. William Lambert of Oregon Health and Science University, has functioned with the highest level of professionalism and scientific integrity, and the Department is grateful for the service of its members.

Benchmark Selection Process: Another question commonly raised in comment was, “Why didn’t ATSAC just recommend the lowest number when there was a choice of benchmark values”? Inherent in all toxicological research are scientific uncertainties in toxicity data and variation in conclusions that can be drawn by different credible reviewers based on professional judgment and differing interpretations of the same studies. ATSAC’s charge was not to automatically select the lowest number possible in any given range of values, but to select an appropriate benchmark value for Oregon that they thought (based on the available evidence and professional judgment) would be protective of public health, including sensitive populations, as well as scientifically defensible considering factors such as the relevance and quality of the research, and scientific uncertainty in the data or conclusions.

To develop a benchmark, DEQ began by reviewing all available peer-reviewed literature and research on a chemical or compound, and prepared an initial recommendation for ATSAC review and discussion. ATSAC then conducted its own independent review and debate of this information, including information provided through public comment, and worked to achieve a consensus recommendation to the Department. Depending on the chemical or compound, ATSAC recommended higher or lower values in a range of possible choices based on the members’ professional judgment and other factors (e.g., when a study was conducted, whether the study involved new information or re-analyzed existing information, etc.) that must be considered in establishing a credible risk-based reference value. The details of ATSAC’s discussions are summarized in Attachment C.

Next Steps

With EQC adoption, the ambient benchmark concentrations for Oregon’s Air Toxics Program will be effective upon filing by the Secretary of State in September 2006.

The ATSAC has already begun working with the Department to develop Internal Management Directives (IMD) on how to apply benchmark concentrations. A few elements of the IMD include air monitoring procedures, comparison of monitored or modeled data to benchmarks, and assessing risk. The IMD will guide implementation by staff, and help to better inform businesses, and citizens about how the benchmarks are to be used in the context of the Air Toxics Program.

The Department is currently focusing on identifying key source categories for air toxics reduction work, such as diesel engines and wood burning. Reducing emissions from these source categories will benefit both air toxics and fine particulate (PM_{2.5}), helping reduce the risk of health-effects as well as nonattainment with the proposed, more stringent, federal fine particulate standard. The Department plans to request additional resources in the 2007-2009 budget to expand air toxics monitoring, emission inventory and other air toxics program work. If the Department proposes future regulatory strategies to address toxics, each strategy will have its own public process and be part of a separate Department/EQC action.

Attachments

- A. Proposed Rule Revisions
- B. Summary of Public Comments and Agency Responses
- C. Summary of Air Toxics Science Advisory Committee Deliberations
- D. Air Toxics Science Advisory Committee Members
- E. Presiding Officers' Reports on Public Hearings
- F. Relationship to Federal Requirements Questions
- G. Statement of Need and Fiscal and Economic Impact
- H. Land Use Evaluation Statement

Available Upon Request

- 1. Legal Notice of Hearing
- 2. Public Comments Received by the ATSAC
- 3. Public Comments Received During Rulemaking

Approved:

Section: _____

Division: _____

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