State of Oregon
Department of Environmental Quality Memorandum

Date: July 23, 2010

To: Environmental Quality Commission

From: Dick Pedersen, Director

Subject: Agenda item O, Rule adoption: Update of air quality ambient benchmark concentrations for ethyl benzene, lead, manganese and mercury
August 18-19, 2010 EQC meeting

Why this is important

Air toxics ambient benchmark concentrations are reference values that DEQ uses to identify, evaluate and address air toxics problems. The benchmarks establish public health goals for toxic chemicals in the air. They also enable DEQ to develop emission reduction strategies and track progress in improving air quality. The commission adopted the original fifty-one ambient benchmark concentrations in 2006. Since that time, DEQ has used them to support scientifically sound evaluation and decision-making. DEQ's Air Toxics program requires a periodic review of ambient benchmark concentrations to keep abreast of new scientific understanding of chemical toxicity and exposure. After recent consultation with DEQ's Air Toxics Science Advisory Committee, DEQ concluded that new information warrants a revision to Oregon's air quality ambient benchmark concentration rules.

DEQ recommendation and EQC motion

DEQ recommends that EQC adopt the proposed updates to OAR 340-246-0090, as seen in attachment A, for ethyl benzene, lead and manganese. DEQ also recommends that EQC adopt the clarification to OAR 340-246-0900, as seen in attachment A, that the current ambient benchmark concentration for mercury only applies to elemental mercury.

Background and need for rulemaking

Air toxics are pollutants known or suspected to cause cancer or other serious health effects. Ambient benchmarks are concentrations of air toxics that serve as goals in the Oregon program. They are based on levels protective of human health considering sensitive populations, like the elderly and children.

DEQ and its Air Toxics Science Advisory Committee evaluated developing new benchmarks for four air toxics emitted in Oregon: lead, ethyl benzene, manganese and mercury because of new scientific information.

In 2008, the U.S. Environmental Protection Agency adopted a new lower National Ambient Air Quality Standard for lead. In addition, the California Environmental Protection Agency's Office of Environmental Health and Hazard Assessment concluded that ethyl benzene should be considered a cancer-causing agent, and that acceptable ambient thresholds for manganese and mercury exposure should be

lowered, making them more protective of children's health. After consultation with the advisory committee, DEQ concluded that the benchmark for lead should be aligned with the federal standard, from 0.5 to 0.15 micrograms per cubic meter, a new benchmark should be added for ethyl benzene and the current benchmark for manganese should be made more protective from 0.2 to 0.09 micrograms per cubic meter. DEQ and the advisory committee agree that at this time there is no new scientific evidence sufficient to warrant lowering DEQ's current benchmark concentration for mercury, although the rule should clarify that this concentration applies only to elemental mercury.

Effect of rule

The proposed changes align Oregon's benchmark for lead with a new federal criteria pollutant standard, a new benchmark will be added for ethyl benzene and the benchmark for manganese will be made more protective. Adoption of the proposed revised benchmark concentrations does not impose new regulatory requirements, and therefore does not have an immediate effect. Air toxics ambient benchmarks are reference values for the purposes of identifying, evaluating, and addressing air toxics problems. Other aspects of the air toxics program provide the implementation mechanisms to reduce air toxics concentrations and achieve these air quality goals. If air toxics concentrations were to exceed these proposed more protective benchmarks DEQ would need to investigate further. It is not possible to say at this stage what sources might be contributing, let alone what specific measures might be needed to reduce the air toxics of concern. DEQ may need to develop emission reduction strategies to meet benchmarks in the future, and those actions could impose regulatory requirements. The effect of any future strategies that DEQ may propose would be addressed at that time through a public process.

Commission authority

The commission has authority to take this action under ORS 468.035, ORS 468A.010(1) and ORS 468A.025

Stakeholder involvement

The Air Quality Division worked with the Air Toxics Science Advisory Committee to review the latest health research for ethyl benzene, lead, manganese and mercury. DEQ and the committee discussed recent actions taken by EPA and California regarding these compounds. These discussions were open public meetings and each meeting provided an opportunity for people to comment on the discussion. Comments are included with the summary of each meeting. DEQ's rule proposal reflects the committee consensus for revisions to Oregon's air toxics benchmarks.

Public comment

A public comment period extended from March 1, 2010 through June 30, 2010 and included public hearings in Portland, Medford and Bend. Summaries of the public's comments, with DEQ responses, are provided in attachment B.

Key issues

Sensitive populations

Commenters want DEQ's proposed benchmarks to adequately protect sensitive

populations. People have different opinions about how to achieve that goal. DEQ and the Air Toxics Science Advisory Committee specifically discussed sensitive populations, including children, when evaluating the recommendations for benchmarks. DEQ made the lead and manganese concentration benchmarks more protective based on evidence of an increased threat to children. The benchmark concentrations proposed now are based on the best currently available information. Since the scientific and medical communities' understanding about toxic chemicals in the environment and the effect on children keeps improving, DEQ will continue to periodically review the rules and incorporate new science. Comments and DEQ's responses for this issue are in attachment B.

Benchmarks for short-term exposures
Commenters asked DEQ to create new benchmarks for short-term, exposures to air toxics (e.g. reflecting daily or hourly exposures). DEQ's current ambient benchmark concentrations are expressed as annual averages in order to evaluate lifetime exposures to exceedingly small concentrations in the air. DEQ has committed to exploring this issue with the Air Toxics Science Advisory Committee and evaluating the possibilities and obstacles to setting short-term benchmarks. DEQ received many comments on this issue, and they are included with DEQ's responses in attachment B.

Scientific basis
Commenters raised concerns about establishing benchmark concentrations in the face of uncertainty in science. Policy and decision makers frequently face this obstacle and account for it in their actions. The benchmark concentrations were determined after examining assessments made by three credible independent entities. Each agency applied uncertainty, sometimes called safety, factors as deemed appropriate. DEQ's recommendations, along with the advisory committee's discussion, looked at those factors as well as the underlying scientific studies. The proposed benchmark concentrations adequately account for the scientific uncertainty as best it can at this time.

Next steps

If approved, DEQ will file the rulemaking with the Secretary of State. These rules are not part of Oregon's Clean Air Act Implementation Plan and do not need to be submitted to the U.S. Environmental Protection Agency. The air toxics ambient benchmark concentrations will be used to implement various facets of Oregon's air toxics program.

Attachments

A. Proposed rule revisions
B. Summary of public comments and DEQ responses
C. Advisory committee membership
D. Presiding Officer's report on public hearings
E. Relationship to Federal Requirements questions

F. Statement of Need and Fiscal and Economic Impact
G. Land Use Evaluation statement

Approved:

Division: _____

Section: _____

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The Oregon Administrative Rules contain OARs filed through January 15, 2010

DEPARTMENT OF ENVIRONMENTAL QUALITY

DIVISION 246

Oregon State Air Toxics Program

340-246-0090

Ambient Benchmarks for Air Toxics

(1) Purpose. Ambient benchmarks are concentrations of air toxics that serve as goals in the Oregon Air Toxics Program. They are based on human health risk and hazard levels considering sensitive populations. Ambient benchmarks are not regulatory standards, but reference values by which air toxics problems can be identified, addressed and evaluated. The Department will use ambient benchmarks as indicated in these rules, to implement the Geographic, Source Category, and Safety Net Programs. Ambient benchmarks set by the procedures described in this rule apply throughout Oregon, including that area within the jurisdiction of the Lane Regional Air Protection Agency. Ambient benchmarks are subject to public notice and comment before adoption by the Commission as administrative rules.

(2) Establishing Ambient Benchmarks

(a) The Department will consult with the ATSAC to prioritize air toxics for ambient benchmark development. Highest priority air toxics are those that pose the greatest risk to public health.

(b) To prioritize air toxics, the Department will apply the criteria described in OAR 340-246-0090(2)(c) to modeling, monitoring, and emissions inventory data.

(c) Ambient benchmark prioritization criteria will include at least the following:

(A) Toxicity or potency of a pollutant;

(B) Exposure and number of people at risk;

(C) Impact on sensitive human populations;

(D) The number and degree of predicted ambient benchmark exceedances; and

(E) Potential to cause harm through persistence and bio-accumulation.

(d) The Department will develop ambient benchmarks for proposal to the ATSAC based upon a protocol that uses reasonable estimates of plausible upper-bound exposures that neither grossly underestimate nor grossly overestimate risks.

(e) Within three months of the first meeting of the ATSAC, the Department will propose ambient benchmark concentrations for the highest priority air toxics for review by the ATSAC. The Department

will propose additional and revised air toxics ambient benchmarks for review by the ATSAC based on the prioritization criteria in OAR 340-246-0090(2)(c). Once the ATSAC has completed review of each set of proposed ambient benchmarks, the Department will, within 60 days, begin the process to propose ambient benchmarks as administrative rules for adoption by the Environmental Quality Commission.

(f) If the Department is unable to propose ambient benchmarks to the ATSAC by the deadlines specified in OAR 340-246-0090(2)(e), the ATSAC will review the most current EPA ambient benchmarks. If EPA ambient benchmarks are not available, the ATSAC will review the best available information from other states and local air authorities.

(g) The ATSAC will consider proposed ambient benchmarks and evaluate their adequacy for meeting risk and hazard levels, considering human health, including sensitive human populations, scientific uncertainties, persistence, bio-accumulation, and, to the extent possible, multiple exposure pathways. The ATSAC will conduct this review consistent with the criteria in OAR 340-246-0090(2)(c) and (d). The ATSAC will report these findings to the Department. If the ATSAC unanimously disagrees with the Department's recommendation, the Department will re-consider and re-submit its recommendation at a later date.

(h) The ATSAC will complete review of and report findings on each set of ambient benchmarks as expeditiously as possible, but no later than 12 months after the Department has proposed them. If the ATSAC is unable to complete review of ambient benchmarks within 12 months after the Department's proposal, the Department will initiate rulemaking to propose ambient benchmarks.

(i) The Department will review all ambient benchmarks at least every five years and, if necessary, propose revised or additional ambient benchmarks to the ATSAC. At its discretion, the Department may review and propose a benchmark for review by the ATSAC at any time when new information is available.

(3) Ambient Benchmarks. Benchmark concentrations are in units of micrograms of air toxic per cubic meter of ambient air, on an average annual basis. The Chemical Abstract Service Registry Number (CASRN) is shown in parentheses.

(a) The ambient benchmark for acetaldehyde (75-07-0) is 0.45 micrograms per cubic meter.

(b) The ambient benchmark for acrolein (107-02-8) is 0.02 micrograms per cubic meter.

(c) The ambient benchmark for acrylonitrile (107-13-1) is 0.01 micrograms per cubic meter.

(d) The ambient benchmark for ammonia (7664-41-7) is 200 micrograms per cubic meter.

(e) The ambient benchmark for arsenic (7440-38-2) is 0.0002 micrograms per cubic meter.

(f) The ambient benchmark for benzene (71-43-2) is 0.13 micrograms per cubic meter.

(g) The ambient benchmark for beryllium (7440-41-7) is 0.0004 micrograms per cubic meter.

(h) The ambient benchmark for 1,3-butadiene (106-99-0) is 0.03 micrograms per cubic meter.

(i) The ambient benchmark for cadmium and cadmium compounds (7440-43-9) is 0.0006 micrograms per cubic meter.

(j) The ambient benchmark for carbon disulfide (75-15-0) is 800 micrograms per cubic meter.

(k) The ambient benchmark for carbon tetrachloride (56-23-5) is 0.07 micrograms per cubic meter.

(l) The ambient benchmark for chlorine (7782-50-5) is 0.2 micrograms per cubic meter.

(m) The ambient benchmark for chloroform (67-66-3) is 98 micrograms per cubic meter.

(n) The ambient benchmark for chromium, hexavalent (18540-29-9) is 0.00008 micrograms per cubic meter.

(o) The ambient benchmark for cobalt and cobalt compounds (7440-48-4) is 0.1 micrograms per cubic meter.

(p) The ambient benchmark for 1,4-dichlorobenzene (106-46-7) is 0.09 micrograms per cubic meter.

(q) The ambient benchmark for 1,3-dichloropropene (542-75-6) is 0.25 micrograms per cubic meter.

(r) The ambient benchmark for ~~D~~diesel particulate matter (none) is 0.1 micrograms per cubic meter. The benchmark for diesel particulate matter applies only to such material from diesel-fueled internal combustion sources.

(s) The ambient benchmark for dioxins and furans (1746-01-6) is 0.00000003 micrograms per cubic meter. The benchmark for dioxin is for total chlorinated dioxins and furans expressed as 2,3,7,8-TCDD toxicity equivalents.

(t) The ambient benchmark for ethyl benzene (100-41-4) is 0.4 micrograms per cubic meter.

~~(t)~~(u) The ambient benchmark for ethylene dibromide (106-93-4) is 0.002 micrograms per cubic meter.

~~(u)~~(v) The ambient benchmark for ethylene dichloride (107-06-2) is 0.04 micrograms per cubic meter.

~~(v)~~(w) The ambient benchmark for ethylene oxide (75-21-8) is 0.01 micrograms per cubic meter.

~~(w)~~(x) The ambient benchmark for formaldehyde (50-00-0) is 3 micrograms per cubic meter.

~~(x)~~(y) The ambient benchmark for n-hexane (110-54-3) is 7000 micrograms per cubic meter.

~~(y)~~(z) The ambient benchmark for hydrogen chloride (7647-01-0) is 20 micrograms per cubic meter.

~~(z)~~(aa) The ambient benchmark for hydrogen cyanide (74-90-8) is 9 micrograms per cubic meter.

~~(aa)~~(bb) The ambient benchmark for hydrogen fluoride (7664-39-3) is 14 micrograms per cubic meter.

~~(bb)~~(cc) The ambient benchmark for lead and lead compounds (7439-92-1) is ~~0.5~~0.15 micrograms per cubic meter.

~~(cc)~~(dd) The ambient benchmark for manganese and manganese compounds (7439-96-5) is ~~0.2~~0.09 micrograms per cubic meter.

~~(dd)~~(ee) The ambient benchmark for elemental mercury (7439-97-6) is 0.3 micrograms per cubic meter. ~~The benchmark for mercury applies to all of its inorganic forms.~~

~~(ee)~~(ff) The ambient benchmark for methyl bromide (74-83-9) is 5 micrograms per cubic meter.

~~(ff)~~(gg) The ambient benchmark for methyl chloride (74-87-3) is 90 micrograms per cubic meter.

~~(gg)~~(hh) The ambient benchmark for methyl chloroform (71-55-6) is 1000 micrograms per cubic meter.

~~(hh)~~(ii) The ambient benchmark for methylene chloride (75-09-2) is 2.1 micrograms per cubic meter.

~~(ii)~~(jj) The ambient benchmark for naphthalene (91-20-3) is 0.03 micrograms per cubic meter.

~~(jj)~~(kk) The ambient benchmark for nickel refinery dust (7440-02-0) is 0.004 micrograms per cubic meter.

~~(kk)~~(ll) The ambient benchmark for nickel subsulfide (12035-72-2) is 0.002 micrograms per cubic meter.

~~(ll)~~(mm) The ambient benchmark for soluble nickel compounds (various) is 0.05 micrograms per cubic meter, where soluble nickel compounds may include any or all of the following: nickel acetate (373-02-4), nickel chloride (7718-54-9), nickel carbonate (3333-39-3), nickel carbonyl (13463-39-3), nickel hydroxide (12054-48-7), nickelocene (1271-28-9), and nickel sulfate (7786-81-4).

~~(mm)~~(nn) The ambient benchmark for phosphine (7803-51-2) is 0.3 micrograms per cubic meter.

~~(nn)~~(oo) The ambient benchmark for phosphoric acid (7664-38-2) is 10 micrograms per cubic meter.

~~(oo)~~(pp) The ambient benchmark for total (as the sum of congeners) polychlorinated biphenyls (1336-36-3) is 0.01 micrograms per cubic meter.

~~(pp)~~(qq) The ambient benchmark for total polycyclic aromatic hydrocarbons (none) is 0.0009 micrograms per cubic meter, where total polycyclic aromatic hydrocarbons are the sum of the toxicity equivalency factor (with respect to benzo(a)pyrene (50-32-8)) adjusted concentrations for all of the following individual polycyclic aromatic hydrocarbons: benzo(a)anthracene (56-55-3), benzo(a)pyrene (50-32-8), benzo(b)fluoranthene (205-99-2), benzo(k)fluoranthene (207-08-9), carbazole (86-74-8), chrysene (218-01-9), dibenz(a,h)acridine (226-36-8), dibenz(a,h)anthracene (226-36-8), dibenz(a,j)acridine (224-42-0), 7H-dibenzo(c,g)carbazole (194-59-2), dibenzo(a,e)pyrene (192-65-4), dibenzo(a,i)pyrene (189-55-9), dibenzo(a,l)pyrene (191-30-0), 7,12-dimethylbenz(a)anthracene (57-97-6), 1,6-dinitropyrene (42397-64-8), 1,8-dinitropyrene (42397-65-9), indeno(1,2,3-c,d)pyrene (193-39-5), 3-methylcholanthrene (56-49-5), 5-methylchrysene (3697-24-3), 1-nitropyrene (5522-43-0), 2-nitrofluorene (607-57-8), 4-nitropyrene (59865-13-3), 5-nitroacenaphthene (607-87-9) 6-nitrochrysene (7496-02-8), acenaphthene (83-32-9), acenaphthylene (208-96-8), anthracene (120-12-7), benzo(g,h,i)perylene (191-24-2), fluoranthene (206-44-0), fluorene (86-73-7), phenanthrene (85-01-8), and pyrene (129-00-0).

~~(qq)~~(rr) The ambient benchmark for tetrachloroethylene (127-18-4) is 35 micrograms per cubic meter.

~~(rr)~~(ss) The ambient benchmark for toluene (108-88-3) is 400 micrograms per cubic meter.

~~(ss)~~(tt) The ambient benchmark for 2,4- & 2,6 toluene diisocyanate, mixture (26471-62-5) is 0.07 micrograms per cubic meter.

~~(tt)~~(uu) The ambient benchmark for trichloroethylene (79-01-6) is 0.5 micrograms per cubic meter.

~~(uu)~~(vv) The ambient benchmark for vinyl chloride (75-01-4) is 0.1 micrograms per cubic meter.

~~(vv)~~(ww) The ambient benchmark for white phosphorus (7723-14-0) is 0.07 micrograms per cubic meter.

~~(ww)~~(xx) The ambient benchmark for xylenes (1330-20-7) is 700 micrograms per cubic meter.

~~(xx)~~(yy) The ambient benchmark for hydrogen sulfide (7783-06-4) is 2.0 micrograms per cubic meter.

~~(yy)~~(zz)T he ambient benchmark for methanol (67-56-1) is 4000 micrograms per cubic meter.

Stat. Auth.: ORS 468.035, 468A.010(1) & 468A.015
Stats. Implemented:
Hist.: DEQ 15-2003, f. & cert. ef. 11-3-03; DEQ 12-2006, f. & cert. ef. 8-15-06

Summary of Public Comment and Agency Response

Title of Rulemaking: Update of air quality ambient benchmark concentrations for ethyl benzene, lead, manganese and mercury

Prepared by: Gregg Lande, Senior Air Quality Planner **Date:** July 1, 2010

Comment period

DEQ held a public comment period March 1, 2010, through 5 p.m. June 30, 2010. At the request of the public, DEQ extended the original comment period from April 2 to June 30, and added a public hearing in Portland May 18, 2010.

DEQ held public hearings March 30, in Portland, March 31, in Medford, April 1, in Bend and again May 18, in Portland. No one attended the hearings in March and April, and 30 people attended the May 18 hearing in Portland.

Organization of comments and responses

DEQ received nine comments by e-mail and four written comments. DEQ received a petition signed by over 600 people on June 30. Eight people provided oral comments at the May 18 hearing in Portland. Many of the individual comments were the same as the comments in the petition. These are summarized below along with additional unique comments. The complete written comments, as well as a transcript of the oral comments, are available upon request.

Summary of comments and DEQ responses	
Comment 1	**Petition:** "The undersigned citizens of Oregon ask the Environmental Quality Commission to ensure that the Air Toxic Health Benchmarks protect children from short term and long term exposure to toxic pollutants present in the environment where they live, play and go to school." Over 600 signatures
DEQ's response	DEQ agrees that protecting children from air toxics is important and commits to evaluating the addition of short-term air toxics health benchmarks to the existing long-term benchmarks. DEQ appreciates the community support for protecting children's health, which is one of the major purposes of this rule update. The ambient benchmark concentrations are designed to protect people, including sensitive individuals, from non-cancer health effects or from a more than one in a million chance of cancer during a lifetime of exposure. Children constitute a very sensitive group because their exposures can be greater than adults, and because air toxics may affect their development. This rulemaking includes revisions to two benchmarks specifically to protect children's health. In addition, DEQ has committed to evaluate the addition of short-term ambient benchmark concentrations to complement the existing long term benchmarks. There has been an increasing awareness in recent years that children may be

	more susceptible than adults to the harmful effects of air pollutants. In 1996 a National Agenda to Protect Children's Health From Environmental Threats expanded EPA's activities to ensure that environmental health risks of children are explicitly and consistently evaluated. The recent revision of the lead National Ambient Air Quality Standard was based on a scientific-health analysis of children's blood lead levels and the correlation with IQ reductions. The California Environmental Protection Agency's Office of Environmental Health Hazard Assessment currently is reviewing whether the state's ambient air quality standards are adequate to protect the health of infants and children. As a result of this review California adopted new more protective Reference Exposure Limits for manganese and mercury. In this rule update, DEQ is revising two of the benchmarks specifically to align Oregon's benchmark concentrations with EPA's new national standard for lead and with the manganese exposure limit determined by California. DEQ will investigate the benefit of adding benchmarks for shorter-term exposures to the DEQ Air Toxics Program. Current benchmarks are annual average concentrations based on protecting people from health threats resulting from long-term (lifetime) low concentration exposures to air toxics. Benchmarks for shorter-term exposures would apply in addition to the existing benchmarks for lifetime exposures. DEQ would use benchmarks for shorter-term exposures to help evaluate threats from air toxics and determine if additional emission reduction measures are needed to protect public health. While the evaluation of short-term benchmarks is occurring, DEQ will continue to implement Oregon's current program to reduce air toxics. DEQ's current air toxics benchmarks are set at levels that would prevent non-cancer health effects and result in a less than one in a million risk of cancer over a lifetime of exposure. By comparing the current benchmarks to annual average monitored or modeled concentrations of air toxics, DEQ has determined that some air toxics concentrations exceed the benchmarks in every Oregon county. To address this, DEQ developed a number of emission reduction measures to reduce exposure to air toxics. DEQ currently is developing additional state-wide and Portland-specific measures. DEQ expects to make significant progress in protecting public health from air toxics risks through these efforts.
Comment 2	"I would like you to include methyl mercury in your air toxic ambient benchmarks. It is equally as dangerous as elemental mercury." Gary J. Fields Hood River County

DEQ's response	While DEQ agrees that methyl mercury is dangerous, DEQ continues to recommend that the air toxics benchmark be limited to elemental mercury for two reasons. First, methyl mercury is not found in the air, but rather is formed by biochemical reactions in soil and water. Second, the health information used to develop the benchmark is related only to elemental mercury. Mercury can be found in the environment in elemental form, combined with other elements to form inorganic compounds, or with carbon species to make organic mercury compounds, the most common being methyl mercury. Methyl mercury is produced from elemental and inorganic mercury by microscopic organisms in soil and water. Methyl mercury is of particular concern because it can build up in certain edible freshwater and saltwater fish and marine mammals to levels that are many times greater than levels in the surrounding water. Eating these fish is a primary route of exposure to mercury. The health information considered by the Air Toxics Science Advisory Committee related only to elemental mercury. In the discussion of this benchmark concentration by the committee a key issue was whether the toxicology of organic mercury compounds was sufficiently similar to that of elemental mercury to warrant including them. Ultimately the committee agreed that it was not sufficient and DEQ proposed revising the rules accordingly. Further, while methyl mercury is clearly toxic, DEQcould find no instances of methyl mercury being measured in air. DEQ continues to recommend that the benchmark apply only to elemental mercury.

Comment 3	"The background documents supporting the proposal indicate that the proposed benchmark concentration (of 0.09 μg/m3) is based on the promulgation by the California Office of Environmental Health Hazard Assessment (OEHHA) of a similar standard in 2008. The MIG [Manganese Interest Group] submitted extensive comments during the OEHHA rulemaking, including a detailed analysis demonstrating why the California standard is unnecessarily stringent, particularly in light of more recent data regarding the health effects of manganese. . . . In fact, the existing benchmark concentration for manganese in Oregon (0.20 μg/m3) is more consistent with the standard of 0.30 μg/m3 proposed for adoption by the Agency for Toxic Substances and Disease Registry (ATSDR), which is expected to be finalized in the next few months as part of the revised *Toxicological Profile* for manganese. . . . Accordingly, we urge Oregon DEQ to reconsider the proposed update to the benchmark concentration for manganese." Joseph J. Greene Kellye Drye & Warren LLP Washington, DC

DEQ's response	DEQ and the Air Toxics Science Advisory Committee evaluated a variety of peer-reviewed and technical documents when setting or updating the ambient benchmark concentrations. A hierarchy of credible information sources has been established by DEQ and the committee: (1) EPA's Integrated Risk Information System, (2) California's Office of Environmental Health Effects Assessment (OEHHA), and (3) the U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry. DEQ and the committee consider the most current information and the effects on sensitive population groups. In this review of the benchmarks, DEQ noted that EPA's value has not been updated since 1998 and that the ATSDR value, although the most current (2009), did not specifically address children's exposure. The revised OEHHA value was both very recent and considered the likely greater susceptibility of children. DEQ recommended, and the Air Toxics Science Advisory Committee agreed, that this was an appropriate response to the scientific uncertainty associated with children's exposure.
Comment 4	"We understand that DEQ proposes to retain the current ABC for elemental mercury . . . . We support this reliance on the technical information. In addition, we understand that DEQ proposes to clarify that the ABC relates only to elemental mercury. We also support this clarification as the scientific data relied upon in establishing the ABC all related to elemental mercury. . . " "AOI is concerned about the addition of ethyl benzene to the list. Not only is it too early in the program to be expanding the list, we are very concerned that the decrease in the manganese ABC was driven by pressures external to the program." John Ledger Associated Oregon Industries
DEQ's response	The air toxics program rules require review of the ambient benchmark concentrations "at least every five years. . . At its discretion DEQ may review and propose a benchmark for review by ATSAC at any time when new information is available." [OAR 340-246-0090(2)(i)] DEQ decided that such a review of the benchmarks was appropriate in anticipation of beginning the Portland Air Toxics Solutions advisory committee process. The Portland Air Toxics Solutions is an innovative approach to reducing human exposure to multiple air toxics from multiple sources within an urban area. DEQ wanted to be sure the committee was aware of the most recent health information available. In 2008, the U.S. Environmental Protection Agency adopted a new, lower federal National Ambient Air Quality Standard for lead and DEQ has proposed to make the lead ambient benchmark concentration the same as the

	federal standard. Also, the California Environmental Protection Agency's Office of Environmental Health and Hazard Assessment concluded that ethyl benzene should be considered a cancer-causing agent; therefore DEQ has proposed adding a benchmark concentration for this chemical. In early 2009 California determined that the reference exposure levels for manganese and mercury exposure should be lowered, making them more protective of children's health. As discussed in the staff report, DEQ, in consultation with the Air Toxics Science Advisory Committee, agreed with the California action for manganese but not for mercury. DEQ continues to recommend the updates contained in the proposed rules.
Comment 5	"It is of great concern that the new stricter manganese benchmark specifically, and all the air toxics benchmarks generally, do not effectively address . . . short term exposures in toxic hot spots and the synergistic and cumulative load . . . ." Mary Peveto, Neighbors for Clean Air Portland
DEQ's response	Please see the response to comment 1 regarding short-term exposures to air toxics. Synergy of chemical exposures is one of the most complex issues in contemporary toxicology. Science does not yet have a way of providing a precise answer given the potential infinite number of possible chemical mixtures in the environment. To get at this question in a reasonable, practical way, EPA recommends assuming that doses and responses to pollutants are additive. When assessing risk from air pollution, DEQ typically takes a precautionary approach assuming that interactions may exist when none may exist and that every person is exposed to all chemicals all the time for a lifetime. DEQ will continue to monitor developments in this area of toxicology as the science develops, and revise the rules accordingly.
Comment 6	"If the benchmarks are truly focused on health . . . then we should set them at zero." "Until we reframe the conversation to put the burden of proof on the polluters, we will live and breathe industrial toxins that damage our children, cause cancers and otherwise reduce our quality of life." "Perhaps the most disturbing aspect of the benchmarks that have been proposed is that they are based on annual averages, disregarding the health effects of the 'spikes' in emissions that may be the real danger." Sattie Clark Portland

DEQ's response	The air toxics program rules, in the case of cancer-causing air pollutants, establish a one in a million probability of lifetime cancer incidence as Oregon's goal. This is an exceedingly low threat when considered in the context of the approximate one-in-three probability of having cancer currently experienced by people in this country. For non-cancer causing pollutants, the goal is no adverse health effect based on exposure for a lifetime. The benchmark concentrations were determined by DEQ in discussion with the Air Toxics Science Advisory Committee. In performing their work, DEQ and the committee relied upon peer-reviewed and technical documents, including the following: (1) EPA's Integrated Risk Information System, (2) California EPA's Office of Health Hazard Assessment, and (3) U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry. All of these agencies have determined concentrations that they deem protective of human health, including sensitive individuals. After careful review of the latest health research, DEQ concluded, and the committee agreed, that the benchmark concentration for lead should be lowered to align with the federal standard, a new benchmark concentration should be added for ethyl benzene, and the benchmark concentration for manganese should be lowered to make it more protective. The proposed manganese is based specifically on a new determination by California to protect children. DEQ continues to propose these non-zero benchmark concentrations based on the best currently available scientific information. A literal "zero risk" level is likely not achievable in modern society. The goal of Oregon's air toxic programs is to significantly reduce the public's risk from non-cancer health effects, and to reduce cancer risk from air pollution to no more than one in a million chance during a lifetime of exposure. A benchmark is intentionally set far below the point where an actual adverse health effect is expected. This allows a wide margin of safety in response to ever present scientific uncertainty. Please see the response to comment 8 regarding the burden of proof in the context of development of the overall air toxics program. Please see the response to comment 1 regarding spikes and short term benchmarks.
Comment 7	"First, all current benchmarks were set by the DEQ Science Advisory Committee, which included a contract employee of Esco Corporation and an active member of AOI [Associated Oregon Industries]." "We are asking you to initiate a full discussion/revision of the benchmarks program and the Science Advisory Committee . . . . Let's step back and take a good look at how other states are solving the problem of protecting citizens from toxic pollution." Sharon Genasci

	Chair, Northwest District Association, Health & Environment Committee Portland
DEQ's response	DEQ asked the Oregon Department of Justice to review the membership of the Air Toxics Science Advisory Committee.. DOJ responded that there has been no conflict of interest. The purpose of the Air Toxics Science Advisory Committee is to provide DEQ with scientifically and technically sound, independent, and balanced advice on the state's air toxics program. Members are selected in accordance with the air toxics rules 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. Membership is not based on affiliation, and members come from a variety of professional backgrounds including industry (consulting), government, and academia. All members were made aware of, and agreed to, the conflict of interest requirements of Oregon law. All significant deliberations and all votes on benchmark values were conducted in open public meetings. Although it is not required, the recommendations all reflect the consensus of the entire committee. Oregon's air toxic benchmarks are set by the Oregon Environmental Quality Commission. DEQ consults with the Air Toxics Science Advisory Committee when reviewing the latest science underlying proposed benchmarks. The committee provides advice and recommendations to DEQ. DEQ may accept or reject the committee's advice. DEQ then proposes benchmarks for adoption in rule through a public process, including an opportunity for public comment. The Environmental Quality Commission adopts Oregon's air toxic benchmarks, based on DEQ's recommendation and after considering the public comments received. Please see the response to comment 8 regarding the structure and function of the overall air toxics program.
Comment 8	"We can set this rule from one of several ways. What are the health effects? That is what the scientific side provides. But from a policy perspective, we can say, we are going to start from zero, as has been articulated earlier and people need to justify why that needs to move up. However, the process has been set up such that it is not allowed to be discussed in that way. So that is one of the fundamental issues and weakness and failures of the process that we are being asked to comment on that can help then to serve the public." "What is the availability of evidence or data? So each element and each entity in this process is isolated and compartmentalized from each other and not allowing for other more constructive processes to occur." Seshu Vaddey

	Portland
DEQ's response	The goal of Oregon's air toxic programs is to significantly reduce the public's risk of adverse health effects from air pollution. Taken by itself, this rule updating the benchmarks is based solely on science. However, this step comes after extensive stakeholder discussions touching on numerous public policy issues that led to the Oregon Air Toxics program. One of the key policy decisions was to determine the level of public health protection the program would attempt to achieve. Oregon's benchmarks are meant to reflect levels that would result in a cancer risk of one in a million based on a lifetime of exposure. For pollutants that cause health effects other than cancer, the benchmarks reflect levels a person could breathe for a lifetime without any non-cancer health effects, such as respiratory irritation or reproductive or nervous system damage. The suggestion from this commenter and others that a precautionary approach ought to be followed in the face of scientific uncertainty was also considered by the stakeholder groups that assisted DEQ in developing the program and the rules. DEQ agrees that the air toxics program should take a precautionary approach to address scientific uncertainty, but does not agree that this means that benchmarks should be set at zero. While not zero risk, the air toxics benchmarks are very protective and set far below the point where an actual adverse health effect is expected. This allows a wide margin of safety in response to ever-present scientific uncertainty. The proposed benchmark concentrations reflect extra precautions to protect sensitive populations, such as children. The Oregon benchmark values are periodically reviewed by DEQ to help ensure they are kept consistent with the evolving science.
Comment 9	"Monitor to ensure the ambient conditions of fence line neighborhoods of known industrial lead sources do not exceed the new stricter federal requirement of no more than 0.15 ug/m3 per quarter." Patrick O'Brien Portland
DEQ's response	This comment specifically refers to lead, which is both a criteria pollutant (with an ambient standard) and an air toxic (with an air toxics benchmark). It is representative of other comments requesting air toxics monitoring. Because lead levels throughout Oregon were well below the old federal ambient standard for lead, DEQ discontinued lead monitoring over the past decade. The new federal ambient standard for lead, on which the proposed air toxics benchmark is based, included a requirement to monitor near industrial sources releasing more than a ton of lead a year. DEQ established such a site in McMinnville in January 2010 near the only industrial facility in the state that exceeded that threshold. Over the past ten years, DEQ has monitored for air toxics in a number of

	Oregon communities. Monitoring sites have mainly been located in residential areas where people, especially children, are most likely to spend time. These areas are affected by a variety of air pollution sources – industrial, commercial, transportation and household. At present, DEQ maintains two permanent monitoring sites, one in North Portland and one in La Grande, which are part of the national air toxics trends network and funded by EPA. Using EPA grants, DEQ also has monitored at multiple sites in the Portland area to better characterize differences in concentration across the city. These projects were done in 1999 and 2005 and include a residential site in NW Portland a few blocks from the industrial area. DEQ has also monitored in Medford and in Salem for two year periods. In addition the Lane Regional Air Protection Agency has monitored in Eugene for a number of years.
Comment 10	"We applaud DEQ's effort to decrease the burden of air pollution on the public's health. . . That said, PSR would like to remind us all that there is no safe level of exposure to lead or mercury, that is, there is no level of exposure at which untoward health effects do not occur." Maye Thompson, Physicians for Social Responsibility Portland
DEQ's response	DEQ acknowledges the support for these rule revisions, as well as the caution regarding the health effects of mercury. As already described, DEQ with the assistance of the science advisory committee has used the best scientific information currently available to recommend these benchmark concentrations. DEQ will continue to monitor assessments made by EPA, California, ATSDR and others, and periodically update the benchmarks to take into account new information about the effect of air toxics on people and the environment.

Oregon Department of Environmental Quality

Air Quality Air Toxics Science Advisory Committee member biographies

Brian Patterson, Ph.D.

Dr. Patterson is currently employed as an environmental consultant with Golder Associates Incorporated in Lake Oswego, Oregon. He has served as a member of the ATSAC since its inception in 2005 and was elected Chair of the Committee in May 2008. He holds a bachelor's degree in Chemistry and a doctorate degree in Physical Chemistry. His areas of expertise include risk assessment, air dispersion modeling, air receptor modeling, environmental regulatory review and air quality permitting. Over his 19 year career as an environmental consultant, Dr. Patterson has completed numerous air quality risk assessments in accordance with U.S. EPA guidance for plywood and composite wood products manufacturing facilities, human health risk assessments under the California AB2588 program, multi-media contaminated site human health risk assessments, and a two-year comprehensive human health risk assessment for the Lawrence Berkeley National Laboratory to meet California Environmental Quality Act requirements.

William Lambert, Ph.D.

Dr. Lambert has served as a member of the ATSAC since its inception. He is an Associate Professor in the Department of Public Health and Preventive Medicine at Oregon Health and Science University (OHSU). From 1987-2000, he held faculty and research positions at the University of New Mexico School of Medicine. He received his Ph.D. from the Department of Epidemiology and Environmental Analysis at the University of California, Irvine and a BA degree from the Department of Biology at the University of California, Los Angeles.

His areas of expertise are air pollution epidemiology, exposure assessment, toxicology, and biostatistics. He has served on a number of advisory/regulatory committees, including Chair of the City of Albuquerque/Bernalillo County Air Quality Control Board, a principal author of state of the science reviews for the American Thoracic Society's Environmental Health Committee, and as member of the Childhood Lead Poisoning Taskforce, Children's Environmental Improvement Project, and Turning Point Environmental Health Initiative, in New Mexico. Currently, he is Chair of the Board of Directors for the Josiah Hill III Clinic in Portland. His community service has been recognized by several organizations, including the Clean Air Award of the American Lung Association of New Mexico and the Lifesaver Award of the New Mexico Chapter of the American Cancer Society.

Kent Norville, Ph.D.

Dr. Norville is an Associate Atmospheric Scientist and project manager at Air Sciences Inc. in Portland, Oregon. He also is an original member of the ATSAC. He specializes in air quality dispersion modeling, data analysis, and model development. He has considerable experience with a wide variety of models for a number of different public and private sector modeling applications. Applications include regulatory permit

modeling, risk assessments, and environmental impact statements; dust fall and deposition studies; accidental release dispersion modeling; visibility modeling; water vapor cloud assessments; odor assessments; transportation conformity and hot spots dispersion modeling; meteorological data processing and assessments; specialized modeling; and custom model development. He has provided modeling assistance to a number of industrial clients, including aluminum producers, wood product facilities, pulp and paper facilities, metal processors, cement plants, mining operations, food producers, electric power producers, composting facilities, and waste treatment facilities.

Dr. Norville is experienced with risk assessment methods and applications and has worked on a variety of different risk and toxics projects, including EPA superfund sites, public municipalities, and private industries across the United States. He holds a Ph.D. degree in geophysics from the University of Washington and a B.S. degree in physics from the California Polytechnic University, San Luis Obispo.

Natalia Kreitzer, P.E.

Ms. Kreitzer received a B.S. degree in chemical engineering from Oregon State University and has been employed as an air quality engineer, first as a consultant and more recently as an air quality regulator. She is also an original ATSAC member. Her relevant engineering experience includes knowledge of sources of toxic emissions to the air, emission control strategies and current and future EPA regulations affecting toxics air emissions.

For the past six years she has worked for the Southwest Clean Air Agency (SWCAA) in Vancouver, Washington and has been the air toxics coordinator at SWCAA since 2000. In addition, her duties include writing Air Discharge Permits for industrial facilities, inspecting industrial facilities and determining compliance with all applicable air regulations including Washington's toxic rule "Controls for New Sources of Toxic Air Pollutants." In 2002, she participated as a member of Washington's Mercury Chemical Action Plan Advisory Committee and assisted in the development of a plan to reduce mercury in the state of Washington.

Dean Atkinson, Ph.D.

Dean B. Atkinson is an Associate Professor of Chemistry at Portland State University in Portland, OR. He received his Ph.D. in Physical Chemistry from the University of Arizona in Tucson in 1995, where he studied the low-temperature kinetics of atmospherically relevant reactions (primarily involving OH radicals) with Dr. Mark A. Smith. He had a two year NRC Postdoctoral Research Assistantship at NIST in Gaithersburg, MD, where he worked with Dr. Jeffrey W. Hudgens on methods for measuring reaction kinetics of free radical reactions, predominantly using pulsed laser photolysis/cavity ring-down spectroscopy. After starting at PSU, he built on that work and became one of the acknowledged experts in the application of the cavity ring-down method, particularly as applied to environmentally related measurements. Since much of his work at PSU has centered on atmospheric chemistry and physics, he has developed some expertise in this area, particularly in methods used to measure atmospheric species (e.g., trace gases, radicals, particulate matter.) He is familiar with the methods used to

model the atmosphere, although his research has not involved the application of those methods to date.

The Atkinson group is currently funded by NOAA to produce a new type of airborne cavity ring-down instrument for measuring the optical properties of the aerosol aloft. The measurements made possible by this instrument should help to clarify both the direct and indirect radiative forcings associated with particulate matter, currently the largest single unknown in the estimation of global climate change. A prototype of the instrument was used for an EPA funded field study in Portland investigating the ambient aerosol optical properties and whether they can be used as a "signature" for diesel PM. This instrument was also used in the TRAMP (TexAQS II Radical and Aerosol Monitoring Project) portion of the TexAQS II field intensive during the summer of 2006.
Current research projects focus on the use of the cavity ring-down technique to investigate air quality and climate change in the context of aerosol effects and the measurement of ambient atmospheric benzene levels in Portland.

David G. Farrer, Ph.D.

Dave Farrer is a public health toxicologist for the Oregon Department of Human Resources where he has worked for two years on human health risk assessment, risk communication, and production of public health assessment documents for the general public, with a special focus on Superfund and other hazardous waste sites. Much of that work has been providing assistance to Oregon DEQ and EPA. He received his BS degree from Brigham Young and his MS and PhD in Toxicology from the University of Rochester and has authored several peer-reviewed and numerous government publications. He has been an Associate Member of the Society of Toxicology since 2002.

Laurel Peterson

Ms. Peterson is currently employed as an associate engineer with Hoefler Consulting Group, located in Salem. She holds a bachelor's degree in Chemical Engineering from Lafayette College. She has six years of relevant experience which includes air permitting, regulatory compliance, emission control strategies, and knowledge of Federal Reference source testing methods. She has been an active member of the Air and Waste Management Association, recently as Vice Chair of the Oregon Chapter and Secretary of the Pacific Northwest International Section. Starting in 2010, Ms. Peterson will serve a three year term as a Director on the Air and Waste Management Association's Board of Directors.

State of Oregon
Department of Environmental Quality **Memorandum**

Presiding Officer's Report

Date: April 1, 2010

To: Environmental Quality Commission

From: Sarah Armitage, Air Quality Planning

Subject: Presiding Officer's report for rulemaking hearing
Title of Proposal: Update of air quality ambient benchmark concentrations for ethyl benzene, lead, manganese and mercury
Hearing date and time: March 30, 2010, 6 to 8 p.m.
Hearing location: Friendly House Community Center,
2617 NW Savier, Portland

DEQ convened the rulemaking hearing on the proposal referenced above at 6 p.m. and closed it at 8 p.m.

No members of the public attended this hearing.

State of Oregon
Department of Environmental Quality **Memorandum**

Presiding Officer's Report

Date: April 1, 2010

To: Environmental Quality Commission

From: John Becker

Subject: Presiding Officer's report for rulemaking hearing
Title of proposal: Update of air quality ambient benchmark concentrations for ethyl benzene, lead, manganese and mercury
Hearing date and time: March 31, 2010, 6 to 8 p.m.
Hearing location: DEQ Conference Room, 221 Stewart Ave., Medford

DEQ convened the rulemaking hearing on the proposal referenced above at 6 p.m. and closed it at 8 p.m.

No one attended or testified. There are no comments from this hearing for DEQ to include in the summary of comments and responses for this rulemaking.

State of Oregon
Department of Environmental Quality **Memorandum**

Presiding Officer's Report

Date: April 2, 2010

To: Environmental Quality Commission

From: Bonnie Hough

Subject: Presiding Officer's report for rulemaking hearing
Title of proposal: Update of air quality ambient benchmark concentrations for ethyl benzene, lead, manganese and mercury
Hearing date and time: April 1, 2010, 6 to 8 p.m.
Hearing location: DEQ conference room, 475 Bellevue Ave., Bend

DEQ convened the rulemaking hearing on the proposal referenced above at 6 p.m. and closed it at 7:05 p.m. when it was apparent that no one from the public was attending. No testimony was presented. There are no comments from this hearing for DEQ to include in the summary of comments and responses for this rulemaking.

State of Oregon
Department of Environmental Quality **Memorandum**

Presiding Officer's Report

Date: May 19, 2010

To: Environmental Quality Commission

From: Gregg Lande, Air Quality Planning

Subject: Presiding Officer's report for rulemaking hearing
Title of proposal: Update of air quality ambient benchmark concentrations for ethyl benzene, lead, manganese and mercury
Hearing date and time: May 18, 2010, 6 to 8 p.m**.**
Hearing location: Oregon Department of Transportation
123 NW Flanders Ave., Portland

DEQ held an informational meeting from 6 to 7 p.m. and then convened the rulemaking hearing on the proposal referenced above at approximately 7 p.m. Attendees were asked to sign registration forms if they wished to present comments, and were advised that the hearing was being recorded. Before taking comments, DEQ briefly explained the rulemaking proposal and procedures for the hearing. Thirty people attended the hearing; eight people testified and two provided their comments in writing at the meeting.

The following is a summary of written and oral comments received at the hearing. DEQ will include these comments in the summary of comments and responses for this rulemaking.

There were three main points that several of the commenters made:

1) That for neurotoxins, such as lead and manganese, there are no safe levels;
2) That there should be ambient benchmark concentrations that apply to short term, meaning less than annual average, exposures; and
3) That the ambient benchmark concentrations should be protective of children.

Additional comments included: concern for environmental justice communities; the desire to account for cumulative or synergistic effects of multiple chemical exposures; the desire for more air monitoring; and generally requesting improvements in air quality. One commenter noted the importance of combining policy with science because of the uncertainty in the science. Another commenter called into question all the original ambient benchmark concentrations due to the make-up of the Air Toxics Science Advisory Committee at that time. No one provided a specific alternative value for any of the benchmark concentrations.

DEQ closed the hearing at approximately 8 p.m.

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

UPDATE OF AIR QUALITY AMBIENT BENCHMARK CONCENTRATIONS FOR ETHYL BENZENE, LEAD, MANGANESE AND MERCURY

Relationship to Federal Requirements

RULE CAPTION

This rule making will update Oregon's current ambient benchmark concentrations by adopting a new benchmark concentration for ethyl benzene and revising the three current benchmarks for lead, manganese and mercury.

Answers to the following questions identify how the proposed rulemaking relates to federal requirements and the justification for differing from, or adding to, federal requirements. This statement is required by OAR 340-011-0029(1).

1. Is the proposed rule making different from, or in addition to, applicable federal requirements? If so, what are the differences or additions?

The proposed rules are in addition to federal requirements.

The 1990 federal Clean Air Act Amendments directed the U.S. Environmental Protection Agency to protect public health by reducing releases of hazardous air pollutants in two stages. First, EPA was to promulgate federal National Emissions Standards for Hazardous Air Pollutants that are technology- based. These standards, often referred to as Maximum Achievable Control Technology, are applied to new and existing hazardous air pollutant sources. Second, eight years after finalizing a control-technology standard, EPA was to consider advances in control technology and the health effects from the emissions remaining after the standards were applied. To accomplish the latter objective EPA had to determine concentrations that are protective of public health. EPA has not adopted ambient benchmark concentrations for toxic air pollutants as rules. Instead, EPA relies on its Integrated Risk Information System and other compilations of chemical toxicity to identify benchmarks for comparison to measured pollutant concentrations and modeled concentration estimates. While there are no toxicology-based federal requirements, standards, or criteria that define or describe annual average concentrations of toxic chemicals in air expected to be protective of human health, the Oregon Environmental Quality Commission adopted as rules the original fifty-one Oregon benchmark concentrations. DEQ relied in many cases on the EPA toxicology database, but not exclusively so.

This rule making will revise previously adopted ambient benchmark concentration rules. The proposed revised Oregon benchmark concentration for lead is based on EPA's review of the recent toxicology literature and the adoption of the new lead National Ambient Air Quality Standard. The new benchmark concentration for ethyl benzene and the revised benchmark concentration for manganese rely on new assessments made by the California Environmental Protection Agency's

Office of Environmental Health and Hazard Assessment. DEQ is proposing to revise the mercury ambient benchmark concentration to clarify its applicability to only elemental mercury.

2. If the proposal differs from, or is in addition to, applicable federal requirements, explain the reasons for the difference or addition (including as appropriate, the public health, environmental, scientific, economic, technological, administrative or other reasons).

The proposed rule will update current Oregon benchmark concentrations. The benchmarks are planning goals that allow DEQ to evaluate and address threats to public health from toxic air pollutants that remain after the technology-based strategies of the federal program. The original benchmark concentrations have provided an important scientific basis of Oregon's air toxic program. DEQ has used them to identify and evaluate measurements and modeled estimates of air quality. Coupled with other aspects of the program, the benchmarks have allowed DEQ to select high priority areas of the state for study and to develop heath risk reduction plans, to identify source categories for emissions reduction strategies and to evaluate potential safety-net sources.

The benchmark concentrations must be reviewed periodically to ensure they reflect current scientific understanding of people's exposure to toxic chemicals in the air and the resulting health effects. DEQ consults the latest findings in EPA's Integrated Risk Information System and criteria pollutant documents as a first step, but also reviews determinations made by other federal agencies, such as the U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry, California and other states. DEQ has established a hierarchy of information sources beginning with EPA's system. In some cases, for both the original benchmark concentrations and these amendments, DEQ selected benchmarks based on more recent information or analyses than what was in the EPA system.

3. If the proposal differs from, or is in addition to, applicable federal requirements, did DEQ consider alternatives to the difference or addition? If so, describe the alternatives and the reason(s) they were not pursued.

The Oregon Air Toxics program was developed as the direct result of lengthy discussions with stakeholders about the inadequacy of the federal program to protect the health of Oregonians and our environment. Federal standards promulgation has been slow to address major sources and toxic chemical releases in Oregon. In addition, as mentioned above, applicability thresholds and requirements based on public health protection were not considered in setting the federal technology-based standards. Studies consistently show that mobile and small stationary sources, such as residential wood stoves, not subject to federal air toxics standards, are important contributors to air toxics in Oregon cities. DEQ determined that an alternative approach was required and the Environmental Quality Commission adopted the Oregon program rules after statewide public hearings and ample opportunity for interested people to comment.

This rule making is the result of DEQ's review of new scientific evidence about the threat to human health caused by toxic chemicals in our air. DEQ considered retaining the existing benchmarks for lead, ethyl benzene, manganese and mercury, but rejected that option because new information shows the existing benchmarks do not meet the risk criteria in the rules; that is, that the ambient benchmark concentrations be protective of sensitive populations. Both EPA, with the revised

National Ambient Air Quality Standard, and California, with its determinations about ethyl benzene and manganese, clearly demonstrated that revising Oregon's benchmarks was called for in order to protect the health of children. DEQ considered waiting to update the benchmarks for the minimum five-year cycle established in the rules, but rejected that option because it would cause a delay in using the latest scientific information.

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
Chapter 340
Proposed Rulemaking

STATEMENT OF NEED AND FISCAL AND ECONOMIC IMPACT

This rule making will update current Air Quality Ambient Benchmark Concentrations by adopting a new benchmark concentration for ethyl benzene and revising the three current benchmarks for lead, manganese, and mercury.

This form accompanies a Notice of Proposed Rulemaking

Title of Proposed Rulemaking	Update of Air Quality Ambient Benchmark Concentrations for Ethyl Benzene, Lead, Manganese and Mercury
Statutory Authority or other Legal Authority	ORS 468.035, ORS 468A.010(1) and ORS 468A.025
Statutes Implemented	OAR 340-246-0090
Need for the Rule(s)	The Oregon Department of Environmental Quality is proposing to adopt a new air toxic ambient benchmark concentration for ethyl benzene and revise three current benchmarks for lead, manganese, and mercury. Air toxics are pollutants known or suspected to cause cancer or other serious health effects. The Air Toxics Program requires a periodic review of ambient benchmark concentrations to keep abreast of new scientific understanding of chemical toxicity and exposure. The Oregon Environmental Quality Commission adopted the original fifty-one benchmarks in 2006, which have been used to support scientifically sound evaluation and decision-making. Together with air measurements and emission estimates, these benchmarks allow DEQ to better understand air toxics problems throughout the state. DEQ and its Air Toxics Science Advisory Committee evaluated new developments for four air toxics: lead, ethyl benzene, manganese and mercury. In 2008 the U.S. Environmental Protection Agency adopted a new lower federal National Ambient Air Quality Standard for lead. In addition, the California Environmental Protection Agency's Office of Environmental Health and Hazard Assessment concluded that ethyl benzene should be considered a cancer-causing agent, and that acceptable ambient thresholds for manganese and mercury exposure should be lowered, making them more protective of children's health. After consultation with the committee, DEQ concluded that the benchmark for lead should be aligned with the federal standard, a new benchmark should be added for ethyl benzene, and the current benchmark for manganese should be made more protective. DEQ and the advisory committee agree that at this time there is no new scientific evidence sufficient to warrant lowering DEQ's current benchmark concentration for mercury, although the rule should clarify that this concentration applies only to elemental mercury.
Documents Relied Upon for Rulemaking	The Air Toxics Science Advisory Committee's gave DEQ consensus recommendations for revising the current ambient benchmarks. The committee relied upon credible information from a variety of peer-reviewed and technical documents, the most important being EPA's Integrated Risk Information System, California's health assessment, and U.S. Department of Health and Human Services, Agency for Toxic

	Substances and Disease Registry. The proposed rule changes reflect DEQ's independent assessment of actions taken by EPA and California. Reference documents and summaries of all the committee deliberations can be found on the committee website. http://www.deq.state.or.us/aq/toxics/#AirToxics	
Requests for Other Options	Pursuant to ORS 183.335(2)(b)(G),DEQ requests public comment on whether other options should be considered for achieving the rule's substantive goals while reducing negative economic impact of the rule on business.	
Fiscal and Economic Impact, Statement of Cost Compliance		
Overview	Adoption of the proposed amendments to the benchmark rules does not impose any new regulatory requirements, and therefore does not have a fiscal or economic impact. Air toxics ambient benchmarks are reference values for the purposes of identifying, evaluating, and addressing air toxics problems. They enable DEQ to identify problems, work to develop solutions, and track progress. DEQ may need to develop emission reduction strategies to meet benchmarks in the future, and these actions could impose regulatory requirements that would likely have a fiscal impact. The effect of any future strategies that DEQ may propose would be addressed at that time through a public process. Based on current monitoring data it does not appear that these benchmark concentration changes will result in ambient air measurements over the benchmarks, and therefore no requirements that will cause fiscal or economic impacts are anticipated at this time. It is important to note that the benchmark concentrations work in conjunction with other aspects of the air toxics program. Even if measurements were to exceed these more protective benchmarks it is not possible to say at this stage what source categories would need reductions, let alone what specific measures might be needed. Therefore, an accurate estimation of the fiscal and economic impact is not possible now.	
Impacts on the General Public	No direct or indirect fiscal or economic impacts.	
Impacts to Small Business (50 or fewer employees – ORS183.310(10))	No direct or indirect fiscal or economic impacts. If in the future, measures are needed to reduce emissions due to a revised benchmark, the fiscal and economic impacts of such measures would be evaluated when proposed.	
Cost of Compliance on Small Business (50 or fewer employees – ORS183.310(10))	a) Estimated number of small businesses subject to the proposed rule	None directly subject
	b) Types of businesses and industries with small businesses subject to the proposed rule	None directly subject

	c) Projected reporting, recordkeeping and other administrative activities required by small businesses for compliance with the proposed rule, including costs of professional services	None directly required
	d) The equipment, supplies, labor, and increased administration required by small businesses for compliance with the proposed rule	None directly required
	e) A description of the manner in which DEQ involved small businesses in the development of this rulemaking	Small businesses on the Air Toxics Interested Persons Gov Delivery list were informed of Air Toxics Science Advisory Committee meetings where the ambient benchmarks were discussed. They have also been notified about this rule making. They have had the opportunity to comment in both these venues.
Impacts on Large Business (all businesses that are not "small businesses" under ORS183.310(10))	No direct or indirect fiscal or economic impacts. If in the future, measures are needed to reduce emissions due to a revised benchmark, the fiscal and economic impacts of such measures would be evaluated when proposed.	
Impacts on Local Government	No direct or indirect fiscal or economic impacts. If in the future, measures are needed to reduce emissions due to a revised benchmark, the fiscal and economic impacts of such measures would be evaluated when proposed.	
Impacts on State Agencies other than DEQ	No direct or indirect fiscal or economic impacts. If in the future, measures are needed to reduce emissions due to a revised benchmark, the fiscal and economic impacts of such measures would be evaluated when proposed.	
Impacts on DEQ	Adopting ambient benchmarks as administrative rules will have no impact on full-time employees, revenues, or expenses of DEQ.	
Assumptions	The primary assumption is that any fiscal or economic effects will result from implementation of other facets of Oregon's air toxics program, such as a source category strategy. This may follow from benchmark adoption, but not from simply adopting ambient benchmark concentrations into the administrative rules.	
Housing Costs	DEQ has determined that this proposed rule making will have no effect on the cost of	

	development of a 6,000 square foot parcel and the construction of a 1,200 square foot detached single family dwelling on that parcel.
Administrative Rule Advisory Committee	The Air Quality Division worked with the Air Toxics Science Advisory Committee to review the latest health research for ethyl benzene, lead, manganese, and mercury. DEQ and the committee discussed recent actions taken by EPA and California regarding these compounds. DEQ's rule proposal reflects the committee consensus for revisions to Oregon's air toxics benchmarks.

_____	Gregg Lande	_____
Prepared by	Printed name	Date
_____	Jim Roys	_____
Approved by DEQ Budget Office	Printed name	Date

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 340
Proposed Rulemaking

UPDATE OF AIR QUALITY AMBIENT BENCHMARK CONCENTRATIONS FOR ETHYL BENZENE, LEAD, MANGANESE AND MERCURY

Land Use Evaluation Statement

1. Explain the purpose of the proposed rules.

The Oregon Department of Environmental Quality is proposing to adopt a new air toxic ambient benchmark concentration for ethyl benzene and revise three current benchmark concentrations for lead, manganese, and mercury. Air toxics are pollutants known or suspected to cause cancer or other serious health effects. Ambient benchmarks are concentrations of air toxics that serve as goals in the Oregon program. They are based on levels protective of human health considering sensitive populations, like the elderly and children.

The Oregon Environmental Quality Commission adopted the original fifty one ambient benchmarks in 2006. DEQ has used the benchmarks to support scientifically sound evaluation and decision-making. Together with air measurements and emission estimates, these benchmarks allow DEQ to better understand air toxics problems throughout the state. The air toxics program requires that the benchmark concentrations be reviewed on a periodic basis to keep current with new scientific understanding of chemical toxicity and exposure.

In 2008 the U.S. Environmental Protection Agency adopted a new lower federal National Ambient Air Quality Standard for lead. The California Environmental Protection Agency's Office of Environmental Health and Hazard Assessment subsequently determined that ethyl benzene should be considered a cancer-causing agent, and that manganese and mercury exposure should be lowered, making them more protective of children's health. After consultation with DEQ's Air Toxics Science Advisory Committee, DEQ concluded that the benchmark for lead should be aligned with the federal standard, a new benchmark should be added for ethyl benzene, and the current benchmark for manganese should be made more protective. DEQ and the advisory committee agree that at this time there is no new scientific evidence sufficient to warrant adjusting DEQ's current benchmark concentration for mercury, although the rule should clarify that this concentration applies only to elemental mercury.

2. Do the proposed rules affect existing rules, programs or activities that are considered land use programs in the DEQ State Agency Coordination (SAC) Program?

Yes **No** ☑

a. If yes, identify existing program/rule/activity: NA

b. If yes, do the existing statewide goal compliance and local plan compatibility procedures adequately cover the proposed rules?

Yes_ No_☑_ (if no, explain):

c. If no, apply the following criteria to the proposed rules.

The proposed rules are not reasonably expected to have significant effects on resources, objectives or areas identified in the statewide planning goals; or present or future land uses identified in acknowledged comprehensive plans.

In the space below, state if the proposed rules are considered programs affecting land use. State the criteria and reasons for the determination.

Adoption of the proposed revised benchmarks does not impose new regulatory requirements, and therefore does not have a land use impact. Air toxics ambient benchmarks are reference values for the purposes of identifying, evaluating, and addressing air toxics problems. They enable DEQ to identify problems, work to develop solutions, and track progress. DEQ may need to develop emission reduction strategies to meet benchmarks in the future, and these actions could impose regulatory requirements that may have an effect on land use. The effect of any future strategies that DEQ may propose would be addressed at that time through a public process. Based on current monitoring data it does not appear that these benchmark concentration changes will result in ambient air measurements exceeding the benchmarks, and therefore no requirements that will cause land use affects are anticipated at this time. It is important to note that the benchmark concentrations work in conjunction with other aspects of the air toxics program. Even if measurements were to exceed these more protective benchmarks it is not possible to say at this stage what source categories would need reductions, let alone what specific measures might be needed. Therefore, determination of land use effects is not possible now.

3. If the proposed rules have been determined a land use program under question two above, but are not subject to existing land use compliance and compatibility procedures, explain the new procedures the Department will use to ensure compliance and compatibility.

Not applicable.