State of Oregon

Department of Environmental Quality Memorandum

Date: Jan. 10, 2020

To: Environmental Quality Commission

From: Richard Whitman, Director

Subject: Item A: DEQ Laboratory Tour (Informational)
Jan. 23-24, 2020, EQC meeting

Why this is important

The Laboratory and Environmental Assessment Division collects, analyzes and manages environmental data to support DEQ's programs and to help Oregonians understand the environmental and public health implications of issues such as climate change, harmful algal blooms, air toxics and emerging contaminants. This tour will provide informational highlights of the laboratory's five sections: Air Monitoring, Water Monitoring, Inorganic Chemistry, Organic Chemistry and the Resource Assessment and Technical support section.

Prior EQC involvement

DEQ's laboratory collects and analyzes data that inform environmental policies and decisions. In 2016, the DEQ laboratory collected data 24 hours a day, seven days a week to evaluate the impacts of air toxics emissions from two glass factories in the Portland area. The results of those analyses identified policy gaps that eventually led the legislature to approve the Cleaner Air Oregon program, and to multiple rulemakings by the EQC (OAR 340-245-0005).

In 2018, a Harmful Algal Bloom in Detroit Lake created cyanotoxins that made their way into the public water system for the City of Salem. For a month, vulnerable populations were advised not to drink the water and many businesses closed or looked for alternative water sources to serve their customers. The laboratory worked closely with the Oregon Health Authority to develop rules to monitor and protect public health from this new threat (OAR 333-061-0510). In 2019, the DEQ lab analyzed bi-weekly cyanotoxin samples from 60 public water systems across Oregon identified as having higher risk. Laboratory staff also worked with EPA researchers to investigate the utility of genetic techniques for the early prediction of cyanotoxin production.

Airborne particulates from smoke, diesel fuel and other sources can create serious health effects for sensitive populations and even healthy individuals at certain levels. Instruments designed to measure airborne particulate concentrations that meet the Federal Reference Methods requirements are expensive and are limited to select communities in Oregon. In 2019, the laboratory's Air Monitoring section developed a new, low-cost instrument known as SensOR™ for monitoring particulates. This work required careful evaluation, calibration, quality control measures and comparisons with EPA Federal Reference Methods before they could be deployed. In August 2019, DEQ obtained a provisional patent from the U.S. Patent Office for this innovative device and as of December 2019, this sensor has been deployed at an additional ten locations statewide. The agency intends to have twenty more deployed by the end of 2020, and the monitoring data is available to the public on DEQ's website.

These examples demonstrate how DEQ's laboratory is at the forefront of environmental science and new policy development to improve the lives of people in Oregon. The laboratory's experienced scientists and chemists produce the high-quality data that are needed to make the best environmental and public health decisions.

Background

DEQ programs, other state agencies, decision makers, stakeholders and the public use the lab's data in a variety of ways. Laboratory data and reports are key to answering questions about Oregon's environment such as:

- **What is the overall quality of the environment across Oregon**?
    a. Integrated Water Quality Report
    b. Air Quality Index
    c. Water Quality Index
    d. Annual Air Quality Report
- **To what extent are environmental conditions changing over time?**
    a. Status and Trend reports
    b. Pesticide Stewardship Program
    c. DEQ's Air Toxics Trend Network
    d. Water Quality Index
    e. Groundwater Management Areas

- **What are the problem areas needing protection?**
    a. Air and water toxics monitoring
    b. Airborne particulate monitoring
    c. Cyanotoxin monitoring
    d. TMDL monitoring
    e. Beach bacteria monitoring
- **What level of protection is needed?**
    a. Biomonitoring
    b. Air and water toxics monitoring
    c. Monitoring to develop new water quality standards
- **How effective are environmental projects and programs?**
    a. Volunteer monitoring program
    b. Status and Trend reports for water
    c. Water Quality Index
    d. Attainment of National Ambient Air Quality Standards
    e. Permit monitoring (audits)
        i. Landfills
        ii. Wastewater
    f. Enforcement and response monitoring activities
        i. Asbestos abatement
        ii. Oregon State Police investigations
        iii. Fish kills
- **Where does environmental quality need to be restored and how?**
    a. Integrated Water Quality Report
    b. TMDL monitoring
    c. Air quality non-attainment areas

Beyond providing answers to these questions, almost all of LEAD's data are publically available for anyone to use.

Highlights of DEQ's Laboratory and Environmental Assessment Division

On this tour, laboratory managers will highlight laboratory capabilities that that inform current environmental issues. Topics will include Harmful Algal Bloom monitoring and analysis, airborne particulate analysis and air toxics monitoring, PFAS method development, metals testing and data systems that support the Integrated Water Quality Report. EQC members will also get an inside look at how a state-of-the-art environmental laboratory operates to meet the data needs of DEQ, partner agencies, stakeholders, decision makers and the public.

DEQ's laboratory programs are designed to provide data for different stages of adaptive management. These data are used to identify the magnitude and extent of emerging issues of concern, determine the appropriate levels of protection for human health and aquatic life, develop management plans, assess compliance with our standards and regulations, understand trends in environmental quality over time, and measure the effectiveness of our projects and programs.

EQC involvement

There is no commission action associated with the tour. Item C, a debrief of the tour, is an opportunity for commissioners to ask additional questions and discuss the tour. As part of that discussion, DEQ asks the commissioners to consider what types of environmental data and information that EQC members find useful to help with policy decisions, and any other questions EQC members may have about the laboratory's processes, procedures and capabilities.

Reported prepared by Laboratory Management Team