

Study samples moss to test for pollutants

Tracy Loew Salem Statesman Journal | USA TODAY NETWORK

A new study of pollutants in moss near the Covanta Marion garbage incinerator shows elevated levels of heavy metals from samples taken closest to the facility, located north of Salem in Brooks.

The study was too small to be conclusive, it's authors say, but the results indicate a need for further testing.

"Utilizing (the closest) sample as an indicator, there is reason to suspect high levels of heavy metal pollution being introduced into the air in the area nearby to the incinerator," the report from Vancouver, Wash.-based Advantage Environmental states.

Beyond Toxics, a Eugene environmental justice nonprofit, funded the study, which took moss samples near schools at various distances from the incinerator.

Executive director Lisa Arkin said the group has been frustrated with the slow pace of Oregon's Cleaner Air Oregon program, meant to close a loophole in state law that allows polluters to emit dangerous levels of toxic chemicals while operating legally.

Gov. Kate Brown launched the program in 2016, after a U.S. Forest Service moss study found a Portland neighborhood had been contaminated with dangerous levels of heavy metals coming from nearby Bullseye Glass.

Covanta was among the first 20 polluters called into the program in March 2019. All were supposed to complete "risk assessments" within a year. So far, none have finished.

"After hearing concerns about the air toxics emissions from local community members, we asked the DEQ to do more environmental sampling. The agency has consistently declined," Arkin said.

"We feel that environmental sampling is necessary due to the age of the incinerator, the amount of medical waste they process, the other types of industrial waste they accept for incineration, the significant amount and varied types of air pollution they are responsible for, and the fact that the DEQ doesn't have a thorough process to determine health risks from dioxins and heavy metal emissions that travel offsite," Arkin said.

Moss as a bioindicator

In the winter of 2013 U.S. Forest Service workers collected moss from 346 locations in Portland, testing the samples for heavy metals.

The study revealed two hotspots, where cadmium, a heavy metal that can cause cancer and damage lungs and kidneys, was measured many times higher than elsewhere in the city.

DEQ followed up with air monitoring, and in 2016 found unhealthy levels of cadmium and arsenic, another cancer-causing heavy metal, in the air around Bullseye Glass in Southeast Portland and Uroboros Glass in North Portland.

The companies were following all state requirements for controlling emissions.

Scientists have used moss as a biological indicator of air pollution since the late 1960s, a Forest Service report on the Portland testing noted.

"Past studies have shown that levels of pollutants in moss correlate with atmospheric air pollution measured by instruments, suggesting that moss can complement existing networks of air quality monitors," the report stated.

In its Covanta study, Advantage Environmental used the same sampling methodology as the Forest Service did in Portland, although at a smaller scale.

The company sampled moss near three schools at varying distances from the incinerator.

The closest sample was taken near the former Brooks Elementary School, about a third of a mile from the facility.

The next was taken near Chemawa Indian School, about three miles southwest of the facility.

The farthest sample was taken near Gervais Elementary school, about five miles northeast of the facility.

Moss samples were collected at least one meter off the ground to avoid contamination from sprays and pets. They were immediately stored at 39.2 F, then dried for 24 hours at 104 F.

The samples were then sent to Specialty Analytical in Clackamas for analysis.

The result: Moss collected near Brooks Elementary, closest to the incinerator, had double the levels of barium, cadmium, chromium, lead and mercury as those collected farthest from the site.

Moss data are an indicator, but don't carry health thresholds. DEQ air monitoring would be necessary to determine whether any hotspots are dangerous.

"Our hypothesis was that finding a pattern of heavy metals in tree moss consistent with proximity to the incinerator would suggest that heavy metals deposition is related to the incinerator emissions (rather than other sources or random presence of heavy metals). Our conclusion is that our hypothesis is supported by the data," Arkin said.

"We are concerned about these pollutants impacting schools located in close proximity to the incinerator," she said.

Further sampling requested

Covanta's 36-year-old incinerator



Moss was collected from near Willamette Valley Christian School, above, and two other schools for heavy metals. The moss from near Brooks Elementary, the closest to the Covanta Marion, had double the level of five heavy metals as samples collected farthest from the site.

ABIGAIL DOLLINS/STATESMAN JOURNAL

burns most of Marion County's residential and commercial waste, generating electricity that it sells to Portland General Electric.

Neighbors and environmental groups have said for years they don't know enough about what the incinerator is burning, and what's coming out of its smokestack.

They say they're particularly concerned about out-of-state medical waste burned at the facility. That waste can have high levels of plastics, which can create dioxins, particulate matter and other harmful pollutants when burned.

Beyond Toxics met with DEQ on May 23 and asked officials to follow up its moss study with further air sampling.

"Our recommendation is that the DEQ should test for heavy metals (and dioxins) in nearby locations in light of our preliminary data," Arkin said. "We are concerned about these pollutants impacting schools located in close proximity to the incinerator."

DEQ spokesman Harry Esteve said the department still is reviewing the report. But he downplayed its significance.

"A very preliminary review (of Beyond Toxics' study) shows levels of heavy metals that are consistent with what we'd expect in a populated environment," he said.

Moss sampling can provide a screening of the presence of certain pollutants in the environment, but can't be used to characterize emissions from a particular source, Esteve said.

"Sampling moss shows a cumulative sense of environmental impact, and cannot provide any sense of time-scale or indicate what direction the metals may have come from," he said.

And, there are no health standards that relate to levels of metals in moss, Esteve said.

More valuable information can be provided by source testing, or measuring levels of pollution as emissions leave the stack, which DEQ has required Covanta to do under the Cleaner Air Oregon program, Esteve said.

Covanta spokeswoman Nicolle Robles declined to comment on the study.

Cleaner Air Oregon process

The Cleaner Air Oregon program is supposed to help the public know exactly what toxic chemicals are in facilities' air emissions, evaluate whether those contaminants pose a risk to health and, if necessary, work to reduce those risks.

DEQ identified more than 350 facilities for inclusion in the program. But at the current pace, it will take decades to get to them all.

DEQ has said risk assessments are proving more challenging than expected.

"We haven't gotten to that stage of getting a completed risk assessment for any of those existing sources," said J.R. Giska a Cleaner Air Oregon official. "Nobody has had to reduce risk yet."

DEQ granted Covanta five extensions to its November 2020 deadline to submit stack testing results.

Covanta completed the testing this March, but deviated from some elements of its DEQ-approved testing plan. It retested some, but not all, of those elements, Giska said.

DEQ decided that the data was representative enough to use for the emissions inventory.

Testing is just the first step in the Cleaner Air Oregon process.

It will take DEQ at least a month to approve the test data, Giska said.

Then, Covanta will have 30 days to submit a final emissions inventory to DEQ for review. Once that's approved, Covanta has 30 days to submit a modeling protocol, detailing how they will develop a model to look at how emissions are dispersed. After DEQ approves the protocol, Covanta has 120 days to submit a risk assessment to DEQ.

The risk assessment will be used to determine whether any changes should be made to Covanta's air quality permit.

Tracy Loew is a reporter at the Statesman Journal. She can be reached at tloew@statesmanjournal.com, 503-399-6779 or on Twitter at @Tracy_Loew.

Strawberries

Continued from Page 1A

a.m. to 4 p.m. Saturdays

Information:

- southbarlowberries.com
- [South Barlow Berries \(Facebook\)](https://www.facebook.com/SouthBarlowBerries)

CORVALLIS

Davis Family Farm

Where: 4380 NE Highway 20, Corvallis

Phone: 541-752-0697

Strawberry u-pick season starts: Tentatively, June 9, but check their Facebook page

Open: 9 a.m. to 5 p.m. every day

Information: [Davis Family Farm \(Facebook\)](https://www.facebook.com/DavisFamilyFarm)

Fairfield Farm

Where: 29204 Lakeside Dr., Corvallis

Phone: 541-760-8163

Strawberry u-pick season starts: Tentatively, the weekend of June 11, but check their Facebook page first.

Information: [Fairfield Farm \(Facebook\)](https://www.facebook.com/FairfieldFarm)

DALLAS

Sliverfarm Fruit

Where: 6000 Perrydale Road, Dallas

Phone: 503-623-2713

Strawberry u-pick season starts: Tentatively, the first or second weekend in June

Open: 6 a.m. to 8 p.m. every day.

Information: [Sliverfarm Fruit \(Facebook\)](https://www.facebook.com/SliverfarmFruit)

DAYTON

Jeff and Jen's U-Pick

Where: 18265 SE Neck Road, Dayton

Phone: 503-560-9275

Strawberry u-pick season started: June 1

Open: 8 a.m. to 8 p.m. every day

Information:

- [Jeff and Jen's \(Facebook\)](https://www.facebook.com/jeffandjensupick)
- jeff-and-jens-upick.business.site

HUBBARD

Boones Ferry Berry Farms

Where: 19602 Boones Ferry Road NE, Hubbard

Phone: 503-678-5871

Strawberry u-pick season started: May 30

Open: 9 a.m. to 6 p.m. Monday through Friday (no u-pickers after 5:30 p.m.), 9 a.m. to 5 p.m. Saturday.

Information:

- boonesberry.com
- [Boones Ferry Berry Farms \(Facebook\)](https://www.facebook.com/BoonesFerryBerryFarms)

JEFFERSON

Greens Bridge Gardens

Where: 3730 Jefferson Scio Dr SE, Jefferson

Phone: 541-327-2995

Strawberry u-pick season starts: The farm is "soft opening" strawberry picking now for customers to pick "a bowl or so" of berries, but check their Facebook page for updates.

Open: 9 a.m. to 6 p.m. every day

Information: [Greens Bridge Gardens \(Facebook\)](https://www.facebook.com/GreensBridgeGardens)

MCMINNVILLE

Bernards Farm

Where: 18755 Highway 18, McMinnville

ville

Phone: 503-472-4933

Strawberry u-pick season starts: The first weekend in June

Open: 9 a.m. to 6 p.m. every day

Information:

- bernardsfarm.com
- [Bernards Farm \(Facebook\)](https://www.facebook.com/BernardsFarm)

SALEM

Fordyce Farm

Where: 7023 Sunnyview Rd NE, Salem

Phone: (503) 362-5105

Strawberry u-pick season starts: June 7

Open: 8 a.m. to 6 p.m. Monday through Saturday

Information:

- [fordycefarm.com](https://www.facebook.com/fordycefarm.com)

Minto Island Growers

Where: 3394 Brown Island Rd S, Salem

Phone: 503-931-6840

Strawberry u-pick season starts: To be determined, possibly the third or fourth weekend in June

Open: 9 a.m. to 5 p.m. Thursday through Sunday

Information: [Minto Island Growers](https://www.facebook.com/MintoIslandGrowers)

Rick Johnson Farm

Where: 3310 Perkins Street NE, Salem

Phone: 503-393-0859

Strawberry u-pick season starts: To be determined, possibly at the end of the second week of June, so keep an eye on their Facebook page.

Open: 9 a.m. to 6 p.m. Tuesdays through Saturdays

Information: [Rick Johnson Farm \(Facebook\)](https://www.facebook.com/RickJohnsonFarm)

Stuart Olson Farms

Where: 6925 Joseph St SE, Salem

Phone: 503-362-5942

Strawberry u-pick season starts: Tentatively, June 9 or 10

Open: 9 a.m. to 6 p.m. Monday through Saturday, 11 a.m. to 6 p.m. Sunday. For u-pick, get there at least an hour before closing.

Information:

- olsonfarms.com
- [Stuart Olson Farms \(Facebook\)](https://www.facebook.com/StuartOlsonFarms)

ST. PAUL

French Prairie Gardens

Where: 17673 French Prairie Road NE St. Paul

Phone: (503) 633-8445

Strawberry u-pick season starts: Strawberries available only during Berries, Brews, and BBQ's festival the first three weekends in June, 10 a.m. to 6 p.m. Saturday and Sunday.

Information:

- FPGardens.com
- [French Prairie Gardens \(Facebook\)](https://www.facebook.com/FrenchPrairieGardens)

Koch Family Farm

Where: 4745 Raybell Road NE, St. Paul

Phone: 503-502-8399 to check for U-pick strawberry availability

Strawberry u-pick season starts: June 2

Open: 9 a.m. to 6 p.m. every day

Information:

- kochfamilyfarm.com
- [Koch Family Farm \(Facebook\)](https://www.facebook.com/KochFamilyFarm)
- *Claire Withycombe is a state government reporter for the Statesman Journal. You can reach her at 503-910-3821 or cwithycombe@statesmanjournal.com.*

Bill Poehler and Emily Teel contributed reporting. Poehler covers Marion County for the Statesman Journal and Teel was the Statesman Journal's former Food and Drink Editor.



Right: Fordyce Farm owner Raymond Fordyce feeds strawberries to his granddaughter, Beatrice Derham, 2, during a strawberry-themed breakfast on Saturday at their farm. ABIGAIL DOLLINS / STATESMAN JOURNAL