



MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

Rely on us.

TO: Commissioners Simpson, Brown, Helgeson, Manning and Mital
FROM: Steve Newcomb, Environmental Manager (RPG #1135), Karl Morgenstern,
Environmental Supervisor and David Donahue, Environmental Specialist
DATE: February 18, 2016
SUBJECT: Pentachlorophenol Plume Associated with International Paper Mill Complex
OBJECTIVE: Information Only

Issue

Provide Board an update concerning potential drinking water threats associated with the pentachlorophenol plume in groundwater near the McKenzie River.

Background

For the past 20 years, the Oregon Department of Environmental Quality (DEQ) has been working with both the Weyerhaeuser Company (Weyerhaeuser) and the International Paper Company (IP) to address the pentachlorophenol (PCP) plume originating from the Springfield mill site at 801 North 42nd Street. Wood treatment practices using PCP occurred on site until approximately 1987. Weyerhaeuser discovered soil contamination in the area after removing a sawmill facility in 1991. Weyerhaeuser signed a consent order with the DEQ in September 1995, agreeing to investigate the contamination and identify potential solutions to protect human health and the environment. To be protective of the Springfield Utility Board (SUB)/Rainbow Water District (RWD) well field, Weyerhaeuser installed a carbon filtration system in 1996 to treat water from the SUB/RWD wells should PCP be detected.

In September 2002, DEQ approved a Remedial Design/Remedial Action Work Plan (RD/RA) for the site and has been tracking the implementation of this plan. The RD/RA work plan requires continued monitoring and reporting on effectiveness of institutional controls at the site to minimize exposure to residual soil and sediment contamination, operation and maintenance of the well field treatment system (as necessary), and monitoring and reporting on the progress and concentrations of the groundwater PCP plume as it migrates to the northwest toward the SUB/RWD supply wells and the McKenzie River.

Ongoing groundwater monitoring of the PCP plume is conducted by PES Environmental, Inc. (PES) on behalf of IP. Prior to 2012, monitoring wells were sampled for chlorinated phenolic compounds on a monthly basis and the results were provided to IP, SUB, RWD, DEQ and EWEB. However, beginning in July, 2012, PES began collecting samples on a semiannual basis from a select number of monitoring wells after DEQ approved proposed monitoring changes submitted by PES on behalf of IP. Analytical results from the monitoring wells are now sent only to IP and DEQ, although IP recently approved the release of data to EWEB in February, 2016. The

SUB/RWD wells and the well field treatment system continue to be sampled on a monthly basis when the systems are in production. Analytical results from the wells and associated treatment system are sent to IP, SUB, RWD, DEQ and EWEB on a monthly basis. EWEB does not provide funding for the monitoring.

Summary of Analytical Results

As previously stated above, only a select number of on-site monitoring wells are currently sampled semiannually by PES. With regard to 2015 data, the highest concentrations originate from a monitoring well located near the center of the IP complex. Values reported for this well in 2015 were 37 micrograms per liter ($\mu\text{g/L}$) and 52 $\mu\text{g/L}$. Looking at all available data since 2001, the peak concentration reported for this particular well was 320 $\mu\text{g/L}$ in 2001. Overall, most sites appear to be experiencing a downward trend in concentrations, with many reporting non-detect values during their respective last sampling event. Of notable exception are two down-gradient monitoring wells located between Keizer Slough and the McKenzie River. Although concentrations appear to have leveled off, and may in fact be declining, concentrations in 2015 for both sites range between 11 $\mu\text{g/L}$ and 29 $\mu\text{g/L}$. Please note a new low-flow purging and sampling procedure (LFPS) was introduced in 2014 to collect groundwater samples from on-site monitoring wells, with approval from DEQ. Advantages of using the LFPS to collect samples can include smaller purge volumes and associated disposal costs, and better representation of ambient aquifer conditions (in terms of lower turbidity and reduced aeration). Results were compared with the standard purge sampling procedure (SPS), which had been used previously. At sites where results compared favorably, the LFPS procedure is to be used. At sites that did not compare favorably, samples will be collected using the prior SPS procedure. It should be noted that where results did not compare favorably, the LFPS procedure often reported concentrations lower than the SPS procedure.

Since 2001, over 300 samples have been collected by PES from three SUB/RWD wells (#1, #2, #3) down-gradient of the plume and adjacent to the McKenzie River. During this time there have been a total of 7 PCP detections. Please note the U.S. Environmental Protection Agency maximum contaminant level (MCL) for PCP is 1 $\mu\text{g/L}$ for drinking water. Of the 7 detections reported, 2 were from well #1 in 2007 and 2015 (.082 $\mu\text{g/L}$ and .092 $\mu\text{g/L}$ respectively). The other 5 detections were all reported from well #2, which included the maximum observed value of .21 $\mu\text{g/L}$ in 2008. The remaining four detections were from 2007 (.16 $\mu\text{g/L}$), 2008 (.097 $\mu\text{g/L}$) and 2015 (.089 $\mu\text{g/L}$ and .194 $\mu\text{g/L}$). No detections were reported for well #3. As expected, most detections have occurred during the second half of the monitoring period, in line with model predictions showing a slow progression of the plume to the northwest and towards the well field.

EWEB Hayden Bridge staff and Drinking Water Source Protection staff have been collecting water samples from stormwater sources in the vicinity of the plume and from raw water at the drinking water plant on a regular basis since 2002. Although Hayden Bridge staff collected raw water samples at the drinking water plant prior to 2000, only data collected since 2000 is included in this review. PCP has been sampled at the intake a total of 148 times since 2000. During this time, there have been no detections above the reporting limit (RL). The RL typically falls around .08 $\mu\text{g/L}$ for most PCP samples. A total of 90 samples have been analyzed for PCP from sites associated with Springfield urban stormwater runoff. From those 90 samples, 19 PCP detections have been recorded, although over half are considered estimated values since the detected values fall below the RL. Concentrations range from .078 $\mu\text{g/L}$ to .8 $\mu\text{g/L}$, all below the MCL for PCP. The maximum value observed originated from the 42nd stormwater channel, but was flagged by the analyzing laboratory as an estimated value. A total of 8 detections were associated with locations adjacent to

or near the plume. However, the other 11 detections came from stormwater sources not associated with the plume. The occurrence of PCP in stormwater channels not associated with IP's property suggests the presence of PCP is likely ubiquitous in urban landscapes.

Discussion

At this time, based on data collected to date, staff do not believe the PCP plume poses a serious threat to EWEB's drinking water quality. Although PCP concentrations are still significant in several down-gradient monitoring wells, concentrations generally appear to be decreasing. It is likely that biodegradation, dispersion and soil adsorption are contributing to this trend. In addition, the McKenzie is likely a "losing" river in this reach, meaning the river is losing water to the shallow aquifer as it enters deeper alluvial deposits (as opposed to gaining large groundwater inputs with potential contaminants). Finally, there is a significant dilution factor when you consider the large volume of McKenzie water mixing with localized groundwater inputs. The resulting concentrations should be significantly reduced, and likely beyond conventional analytical detection limits. However, as the plume continues to migrate towards the northwest, staff will continue to monitor the McKenzie River and stormwater sources in the area for signs of surface water impacts.

Recommendations

This memo is for informational purposes only. Staff will continue to monitor the situation and assess new ways to evaluate potential threats to the McKenzie River from the PCP plume.

Requested Board Action

No formal action is requested at this time.