

# MARCH'S MEETING MINUTES

## **Members, Alternatives & Guests Present:**

Larry Blanchard  
Jim Brazil  
Walt Canter  
Mark Cassell  
Dave Christensen  
Geoff Clayton  
Don Davidson  
Roger Eberhart  
Gary Hajek  
Don Henry  
Larry Jones  
Wes Jorgenson  
Kristin Lamson  
Andrew Lee  
Erin Leonhart  
Arne Lind  
Pam Martin  
Steve Moyer  
Steve Ohlenkamp  
Tom Peardon  
Bill Pelozo  
Randy Reece  
Greg Reed  
Ron Sheadel  
Lorraine Snyder  
Ron Speer  
Karen Steeb  
Laura Szentes  
Scott Thomasson  
Chris Thorn  
Bill Tracy  
Art Wadekemper

## **King County Staff:**

Betsy Cooper  
Bob Hirsch  
Deb Lester  
Christie True  
Laura Wharton

## **Chair's Report - Dave Christensen**

Introductions were made and March's minutes were approved.

## **WTD Director's Report - Christie True**

Christie spoke on an issue the wastewater industry as a whole is currently facing: how do you create more diversity within the industry? As the workforce ages, what strategies can we employ that will attract people into our industry including younger workers, women and people of color? Christie also announced in the coming months that she would be meeting with the local agencies individually to find out what your opinions are on WTD services and how WTD as an organization can improve their relationship with you.

**Member Comment:** Many of us have lost all trust in King County. The county has to work with us, we have to build a bridge first and not be so adversarial towards one another.

## **Endocrine Disrupting Chemicals Update on Survey Sampling Report - Deb Lester**

In the coming weeks, the Survey Sampling Report that the county did on Endocrine Disrupting Chemicals (EDCs) in King County surface waters will be finalized and posted to the county website. The EPA defines EDCs as external compounds that interfere with or mimic natural hormones in the body that are responsible for the maintenance, development and/or behavior of an organism. Why are we concerned about these compounds? Public concern increased with the publication of a book called "Our Stolen Future" in 1996. The book was for the lay person and written in a way that the general public could understand and that sparked a lot of the interest in EDCs. Along with this there were reports of feminization and altered reproduction of fish downstream of sewer treatment plants in both the U.S. and in Europe. In 2002, the USGS conducted a survey and detected EDCs/pharmaceuticals in 80% of the water bodies that they monitored, increasing public concern. There's been increasing scientific literature linking EDCs with effects on fish, aquatic life and humans and recently, we have seen altered reproduction in Elliot Bay fish based on the work done jointly by NOAA and WDSW. All these issues have kept EDCs in the news and interest fairly high. EDCs represent a wide variety of chemicals and as a result that makes the issue very challenging. EDCs

can be found in industrial compounds, personal care products, certain metals and pesticides and the natural hormones that we all produce and some pharmaceuticals are considered EDCs.

**Member Question:** Any compounds considered of greater concern?

**Answer:** Yes, some of these compounds are more potent than others. That means if you have a very low concentration of one and a higher concentration of another, the lower concentration of chemical can be just as big an issue as the higher ones because it has more potency. Of the compounds that I just talked about those that are more potent are the synthetic and natural hormone and the other two are Bisphenol-A and 4-Nonylphenol

## **Examples of Some EDC's**

<u>Industrial/Household Chemicals</u>	<u>Pesticides</u>
4-Nonylphenol (detergents, soaps)	Atrazine
Bisphenol-A (hard plastic, coatings)	Carbofuran
PBDEs (flame retardants)	Endosulfan
PCBs, Dioxins	DDT, DDE
Phthalates (soft plastics)	Aldicarb
Parabens (preservative)	Lindane
<u>Sex and Steroidal Hormones</u>	<u>Metals</u>
Natural and synthetic hormones	Hg, Cd, Pb,
(e.g., estrogen, ethinylestradiol)	As, Tributyltin

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while they are less potent they are found in higher concentrations. They are very ubiquitous.

Pharmaceuticals and personal care products (PPCPs) are often lumped together but there is a difference between the two with some overlap. A subset of PPCPs, synthetic hormones are known as EDCs. Examples of PPCPs include human and veterinary drugs, diagnostic agents, antibacterial compounds, surfactants, other compounds in soap and shampoo and consumer products. Some of the potential ecological effects that these compounds elicit on water life and aquatic organisms are reproduction; they can impact the reproductive potential of many organisms and from a developmental aspect they can interfere with the development of some types of aquatic organisms and wildlife. They can result in abnormalities and impact an immune response which makes them more susceptible to disease and in some cases the behavior of these organisms can be impacted. An example of this is vitellogenin, a protein that female fish produce when they are about to produce eggs that is typically not found in male fish. When male fish are exposed to EDCs they tend to produce this protein. Where there is a concentration of effluent there's likely to be exposure to EDCs and the amount of vitellogenin increases. We don't know if the production of this protein is detrimental to fish. One theory is that because it takes a lot of energy to produce vitellogenin that added energy stresses the fish but ecological relevance of this is unknown. Another impact is a skewed sex ratio using USGS data from a study of white suckers upstream and downstream of a treatment plant. Upstream of the treatment plant (the control site) the sex ratio is not 50/50 and downstream of the plant it's skewed toward females. EDCs can cause the sex ratio to be disrupted impacting fish populations. There are many challenges with EDCs because there isn't a standard treatment. There aren't standard analyses in the laboratory for some of these compounds, so they can't be readily analyzed. A low detection limit is needed and that is a challenge for many labs. The compound potency varies and there's a variety of hormonal effects on organisms. There's evidence when combined together they can act with synergism which means as a group they can have a greater effect and make different compounds more potent than others than if a critter was just exposed to them on their own.

**Member Question:** On the Fountain Creek there was no treatment? Why would there be a difference above and below that?

**Answer:** The difference is fairly slight and that is sort of the general variability that you might see in a population. You typically don't find that equal of a population there is some variability.

**Member Question:** Is there a time where you will find more males? **Answer:** You tend to find some variability but typically don't see 10 of one sex and 1 of the other, it's usually between .4 and .7. It's not always 50/50.

**Member Question:** Is this all fish or just the white sucker? **Answer:** In this particular instance they looked at the white sucker. But other folks have looked at other fish species and found similar effects.

**Member Question:** How much of this is actually storm water runoff as compared to sanitary sewer discharge?

**Answer:** Good question and I will address that on some level in the results of what we found in our study. There isn't a lot of data on stormwater runoff and you typically wouldn't find these hormones in stormwater runoff unless you had a septic or pipe leak. There really is no source. There is a source from wildlife but it tends to be very low, so if you are seeing a big spike of the hormone in surface water and there's no wastewater discharge there is a human source that is causing it.

**Member Question:** What level of treatment are we talking about with the sanitary sewage? **Answer:** Secondary treatment.

**Member Question:** Was this the area comparable to Seattle or are we talking about more rural areas?

**Answer:** The white sucker data was from a stream that effluent was discharged into so there are fewer solutions when wastewater discharge is put into a smaller water body than say, the Sound. I don't know the exact percentage of effluent in that stream but it's far greater than anything we would experience here. That example illustrates the potential impacts of EDCs in other places.

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**Member Question:** Is this a river or Puget Sound that you are referring to because the Sound is a bigger area to spread out?

**Answer:** Right, we would not see this level of impact although the folks at NOAA and WWDFW have seen similar effects in Elliot Bay. They don't know why or what particular chemicals are causing it but they do know something seems to be happening to English Sole from an endocrine system effect in Elliot Bay and to a lesser extent in Duwamish and other parts of Puget Sound.

The purpose of the survey was to determine if EDCs are present in KC surface waters and better understand the issue and magnitude of any potential problems, i.e. detected to determine the general spatial distribution, is there an obvious area or chemical of concern. The Environmental Lab had to develop the capability to analyze these compounds; and detect them at very low levels. The data gathered will be used to guide future monitoring. In no way was the study intended to provide a comprehensive assessment of EDCs in surface waters. Sampling locations included streams, Lake Union, Lake Washington, Lake Sammamish, marine. Samples were collected quarterly and additional EDC data associated with other studies was included (Sammamish River, Snoqualime River and smaller streams).

<b>New Compounds Evaluated</b>
<b>Hormones</b>
Estone (E1), Ethynylestradiol (EE2), Estradiol (E2), Methyltestosterone, Progesterone and Testosterone;
<b>Plasticizers</b>
Phthalates (7), Bisphenol A (BPA);
<b>Surfactants</b>
Total 4-Nonylphenol (NP);
<b>Pesticide</b>
Vinclozolin

**Member Question:** How far up the green watershed have you gone up?

**Answer:** We've gone just below the dam.

**Member Question:** What was that other lower location? **Answer:** The Cedar River.

**Member Question:** Do you plan to do more studies in the Kent/Auburn area? **Answer:** Right now, we don't have any future plans to do this again. We just finished this report and we need to think about that and if we need to do more monitoring.

**Member Question:** I think it would be worthwhile to do more in the middle of the watershed. It's quite a long distance. Can you put it on your to do list? **Answer:** Yes.

**Member Question:** What funding are you using to do these studies? **Answer:** Well... Once again the locations that were being sampled, they were part of existing watershed studies that was going on. These additional samples that were taken were at the same time as the other. It was a combination of funds from watershed and wastewater.

Storm water samples were collected as part of two separate efforts; the Evergreen Point Floating Bridge / SR 520 (3 downspouts) and in a joint effort with the City of Redmond, the Sammamish River (4 discharges). All samples were 100% stormwater and not mixed with surface waters. Of the 16 compounds that we analyzed for 11 were detected at least once. The concentrations of compounds were highest in stormwater. Highest frequency of detection and levels were BPA, NP, EE2 and E2 detected in streams and rivers. There was a blank contamination problem for phthalates, BPA and NP because they are everywhere and that limited our data availability.

**Member Question:** Why were you surprised that the compounds were highest in stormwater? We've been hearing a lot of feedback about vehicles on the street going into the storm. I would think that would contribute to that.

**Answer:** The literature always points the finger at sewage treatment plants and no one has looked very deeply at stormwater sources. We expected that we would see it in stormwater but we didn't expect to see it at the levels that we did. Because there isn't a lot of data out there we didn't have anything to compare it to or put it in context when we saw the data. But the message to me was that there are multiple sources of these compounds.

*Minutes Continued from Pg. 4*

**CONTACT INFORMATION:**

**KC Water and Land Division**

**Deb Lester - Risk Assessment**

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**Phone: 206-296-8325**

**Member Question:** Because we don't have treatment plants that were dumping into the Sound all these are stormwater sites? **Answer:** They were ambient surface water sites. There were a few sites where we collected 100% stormwater coming off the bridge or a conveyance point that had not been mixed with stream or waste.

**Member Question:** Do these compounds biodegrade? Or are they there forever? **Answer:** Yes, they do biodegrade but each compound does it differently. Nonylphenol starts out as a much larger chemical and as it works through the treatment process and biodegrades it becomes more toxic. We think about something degrading as less of a problem but some compounds become more of a problem. Hormones when they are excreted and discharged into the treatment plant process change form and that can make it difficult to understand what is going on.

**Member Question:** Then there is the combination of all them? **Answer:** Correct.

Stream samples were taken under dry and wet weather conditions. Some compounds were detected in streams at high levels with greater frequency of detection. Under wet weather we found NP and BPA and under dry weather we found E2 and EE2. There were a greater number of samples collected during the dry weather.

**Member Question:** Is that the lake or the river? **Answer:** The Sammamish site is stormwater flowing into the river, these samples that I'm showing here drain directly into the river.

**Member Question:** Can you give us some perspective on the concentrations? **Answer:** I'm going to get to that.

**Member Question:** Is there any correlation on why there looks to be so much green in Lake Sammamish as opposed to Lake Washington? **Answer:** I don't really know why that is. I do know that the locations are more densely located in those areas.

**Member Question:** Can runoff from construction contribute to this? **Answer:** I don't really think of construction as being a significant source of these compounds. I think of it more as a household product issue.

**Member Question:** Do you have any historical research that you've done on this that you can compare this too?

**Answer:** No. This is the first data that we've collected of this type. There is data from other locations where other folks are doing similar research and their findings have been consistent with what we've found. We don't stand out as having a problem more significant than other folks have.

**Member Question:** This disparity between Lake Washington and Lake Sammamish, do we know what compounds (hydrozone) are used there. It's kind of amazing that we have this shift to the areas where we have a lot of ground being exposed.

**Answer:** I don't know if the compounds are in that product. It's amazing how many products you find these compounds in.

**Member Question:** Is there any place where we have to worry about? **Answer:** No, most people don't have a long history of collecting data. They are just starting out. there isn't a lot of data to compare to find trends over time.

**Member Question:** The three circles in light green, where are those located? **Answer:** The dam and Thornton Creek.

**Member Question:** Did their findings show more compounds with smaller water bodies versus the Sound.

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**Answer:** Most folks have looked at these compounds in streams; to a lesser extent lakes and marine waters.

**Member Question:** Do they stay or suddenly get trapped? **Answer:** We don't have any sediment data to know if these compounds are accumulating in the sediment. Other folks have been starting to look in the sediment and they are finding Nonylphenol in the sediment and fish.

**Member Question:** Is any stormwater funding used for funding this study? I just want to make sure that this is being used to complement the sewer side. **Answer:** I'm not sure. We will have to get back to you on that.

The survey detected 11 of 16 new compounds detected. Most compounds detected in each water type suggesting multiple sources for the compounds. Concentrations were relatively low and most detections were below most significant effect levels identified in the literature. The greatest concern was EE2 and NP in the streams, please keep in mind that you can detect estradiol from wildlife although in low concentrations.

**Member Question:** Is it possible to devise what the detection limits are on the equipment? **Answer:** It's possible.

**Member Question:** What is next, are you going to continue to monitoring these sites? **Answer:** We have to figure that out.

**EDCs - How do they reach the environment?**  
Natural/synthetic hormones excreted and discharged via wastewater;  
Some household products contain EDCs are washed down the drain;  
WW treatment not designed to remove some EDCs;  
WW treatment can increase toxicity of some EDCs;  
Pesticides and other EDCs transported to environment via stormwater;  
Wildlife/Agriculture - animals source of hormones to surface waters.

**Member Question:** Are you going to be looking at the effect on the ground itself of where you're using reclaimed water? Are you testing the soil to see if it has an impact on the soil? **Answer:** We haven't done any of that work.

**Member Question:** When were these samples collected? **Answer:** In 2003 and 2004.

**Member Question:** How long ago was the technology that's identified available to detect this?

**Answer:** USGS did their initial study in 2002 and before that there was some work in research labs.

**WTD NPDES Permits- Betsy Cooper**

Under the Federal Clean Water Act you may not discharge pollutants into U.S. waterbodies without a permit. A permit can be granted by EPA or delegated agency. (EPA has delegated authority to WA State Department of Ecology.) Under this permit discharge of pollutants can be allowed if such discharge does not create or significantly degrade water quality. The permit program is called National Pollution Discharge Elimination System (NPDES). Ecology determines what limits are placed on pollutants discharged by the treatment plant to avoid exceeding water quality standards. They set timetables for submission of information and then they put together a draft permit and then a final permit allowing time for comments. KC has three NPDES permits: West Point-West Section Permit, South Plant-East Section Permit and Vashon Treatment Plant. In the future, permits will be obtained for Carnation Treatment Plant and Brightwater.

**Member Question:** Is CSO part of the permit? **Answer:** Yes.

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Both of the large permits have some special Wet-Weather operating requirements that are different removals. We only have to remove 80% because a significant part of that flow is diluted and some of it is considered CSO flow. At South Plant there are times when we had to flow blend.

That has a specific requirement in our permit of when and where we can do it. We have the Green River Outfall to be used in a emergency. We've never had to but we have to maintain it and there is specific requirements for that.

**Member Question:** Where is that located? **Answer:** It's right off the Green River by what would be the West Part of the Renton Treatment Plant.

KC must apply for permit renewal 6 months prior to permit expiration date. The term is typically 5 years but can be extended if Ecology does not complete process in time. Public involvement begins when Ecology issues an agency draft, then a public draft. Notices are posted in newspapers and on Ecology's website. The public and appropriate federal and state agencies have 30 days to submit comments and request a public hearing. The current West Point permit calls for a meeting with interested parties a year before the permit expires to solicit any issues or public concerns. This is an opportunity for the public to express concerns and air issues before we make application. KC permit expiration dates are: West Point - December 2008; South Plant - September 2009; and Vashon Treatment Plant - August 2011.

**Member Question:** You said, you don't have a permit for Brightwater?

**Answer:** The general guidelines for how we build our plant, yes. Normally, we don't apply for that permit until 6-12 months before the plant is operational.

**Member Question:** We've been told that KC had to do reclaimed water in order to get their permits? **Answer:** You have to submit to Ecology your facility plan and they let you know what your permit requirements will be.

**Member Question:** What about Capacity, Management and Operations and Maintenance Rule (CMOM)? **Answer:** It's never come up.

**Scope of NPDES Permit Process**

- Ecology reviews of facilities and operations
- Treatment, conveyance facilities and outfalls;
- Capacity
- Pollutant and toxicity data
- Other programs (e.g. - pretreatment;

**What Does the NPDES Permit Contain?**

- \* Discharge Limitations
- Treatment Plants  
BOD, TSS; FC; ph; Total Residual Chlorine
- CSO Treatment Facilities  
Annual TSS removal; FC; Settleable Solids;  
# of discharge events per year; 5-yr avg volume
- Reporting & Monitoring Requirements
- Facility Loadings Analysis
- I/I Progress Report
- Operation & Maintenance Requirement & Reporting
- Pretreatment Program Reporting & Program Operating Requirements
- Whole Effluent Toxicity Testing
- Sediment Monitoring (West Point only)
- CSO Program Reporting & Progress Requirements (West Section only)

## MEMBERS' MEETING MINUTES

**Finance Subcommittee - Trish Erickson, Chair**

The meeting was delayed till they have more information available. The capacity charge is scheduled to increase but no numbers have been given.

**Engineering & Planning Subcommittee - Scott Thomasson, Chair**

The next E&P meeting is scheduled for Wednesday, May 9th.

**Contracts Subcommittee - Ron Speer, Chair**

Please contact Ron Speer for details on the current contract negotiations with King County.

Metropolitan Water Pollution  
Advisory Abatement Committee



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May 2007

SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
May 2, 2007 10:30-2:00 pm MWPAC General Meeting & Members' Meeting Renton Technical College H103						
6	7	8	9	10	11	12
May 9, 2007 9:00-12:00 pm E&P Subcommittee Meeting Brightwater Treatment Plant Q-Room						
13	14	15	16	17	18	19
May 23, 2007 10:00-12:00 pm E&P Subcommittee Meeting King Street Center 8th Floor Conference Room						
20	21	22	23	24	25	26
27	28	29	30	31		

Metropolitan  
Water  
Pollution  
Advisory  
Abatement



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