



PROTECT THE PENINSULA'S FUTURE

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RE: <http://www.ecy.wa.gov/programs/wq/ruledev/wac173219/OTS-7078%203Final.pdf>

Protect Peninsula's Future, a 42 year 501c3 non profit organization based on the North Olympic Peninsula, and the Olympic Environmental Council, a 25 year 501c3 representing citizens and organizations in Jefferson and Clallam Counties offers the following comments regarding sewage effluent as reclaimed water.

We applaud the administration and agencies for recognizing the harm to marine systems from wastewater treatment plant effluent emissions. While the proposed standards are a good first step, the correct and safe and responsible answers have not yet been found.

What to do with sewage clearly presents a dilemma, including what to do with treated sewage solids and sewage effluent.

Over the years, much has been learned about sewage, sewage sludge and sewage effluent. We have learned the following:

- if sewage sludge were not going to be used for "beneficial use," it would be considered "hazardous waste." (1)
- Wastewater treatment plants contain wastes from multiple sources. Mixed together these wastes can form unknown contaminants.
- Sewage contains thousands of CECs/contaminants of emerging concern.
- The treatment of sewage to create cleaner effluent causes more contaminated sludge.
- Antimicrobials like triclosan causes ineffective treatment, even failures. (2)
- Few of the actual contents in sewage processed in treatment plants are known and each batch can be different. Thus, no testing of these are done and no containment. Examples are prions, microbeads, flame retardants, GMOs, pesticides, CECs, hormones, metals, marijuana and much more. All remain in the effluent and solids (3).
- Prions are transmissible. (17) Heat at 1000C/1852F or hotter for a minimum of 15 minutes is necessary to destroy transmissible spongiform encephalopathy (TSE) prions. (4)
- Pharmaceuticals and personal care products (PPCP), hormones and steroids subject to advanced treatment processes remain in reclaimed water. (5)

- Plants uptake prions, exposing humans and wildlife. (6)
- Anti-biotic genes and bacteria created during sewage treatment plants persist in the treated solids and effluent and have subsequently been found in food. (7)
- Sewage solids spread on land contain many pathogens. Some thought to be killed in treatment plants reawaken when applied to soil. (8)
- Humans and wildlife have become sick and have died from exposure to sewage solids applied on land, especially within one mile of its spreading. (9)
- Food crops and flowers uptake some sewage sludge contaminants and pathogens. (10)
- Where sewage sludge is spread on grazing land, sludge contaminants have been passed to consumers through meat, milk, and cheese. (11)
- Sewage sludge laden lands often die and soil becomes unusable for many years. (12)
- Effluents emitted into water bodies can travel long distances and harm marine life and habitat. (13)
- BOD 5 day bacteria treatment has little effect on effluent. (14)
- Toxic effluent and stormwater overflows back flow over and into sand, leaving beaches and nearshore sediments highly polluted and a danger to beach goers. (15)
- Land spread sewage solids and effluents seep into the ground, into ground water and run off into surface waters.
- Chlorine and ultraviolet radiation is insufficient to detoxify effluent. (16)

Given the above, how will Ecology reconsider the use of effluent for reclaimed water, which can be detrimental to the suggested uses — croplands, wetlands, recreational sites? Because, in essence, applying the contaminated effluent to sites is near to dumping all the treatment plant wastes on land.

WAC 173-219-020

Purpose and scope.

(1) The purpose of this chapter is to provide consistent, predictable, and efficient regulatory reviews, permitting processes and technical standards that encourage the generation and beneficial use of reclaimed water while preserving and protecting public health, the environment, and existing water rights

Comment: As written, and knowing the contents of effluent, protecting public health and the environment will not be attainable through the treatment processes proposed in this proposed legislation. There are technologies, such as plasma arc, that can take sewage, effluent and even solid waste and heat at extremely high temperatures which power the plant and sell the left over energy to the grid, or use it to power buildings, automobiles, homes and other needs, radically minimizing any environmental harm. These technologies should break toxic chemical bonds. We suggest this is where Ecology should be headed, rather than color coding pipes and offering municipalities financial support to build infrastructure that will continue to contaminate soil, air, water, wildlife and human health.

As the population continues to grow, investments in waste-to-energy technologies must be prioritized in order that energy consumption can be less reliant on other and dwindling energy resources, and to relieve taxpayers of ever increasing energy rates.

WAC 173-219-050 Lead Agency Designation

5.(b) Assure that the public health-related treatment, reliability, and exposure requirements for reclaimed water production, storage, distribution, and use are adequate to protect public health, such as by employing a person(s) certified by DOH under chapter 246-292 WAC for cross-connection control prevention or water distribution operations; and

WAC 173-219-110

Use of reclaimed water for water right mitigation.

"wetland mitigation" means compensatory mitigation or the compensation stage of the wetland mitigation sequence, where impacts to wetland functions are offset through the creation, restoration, enhancement, or preservation of other wetlands

Comment: What does "mitigation" mean? What is to be "mitigated?" Is there an admittance in the definition and WACs that there will be impairment where the reclaimed water is used, but offset by "creation, restoration, enhancement, or preservation of other wetlands?" See also WAC 173-219-160 (h) Engineering report. "...An analysis of potential physical and water quality impacts from the reclaimed water treatment, storage, distribution and use areas..."

Unless detection technology is used to find all the contaminants and pathogens in the mix, adequate public health protection is not possible.

WAC 173-219-130

Agency review standards.

Content. (d) ...assure the minimum requirements for water quality, treatment and reliability...

Comment: Reusing reclaimed water has serious consequences. "minimum requirements" should be "maximum requirements."

WAC 173-219-180 (2)(d)

Comment: This WAC passage does not come up on a search, except for someone commenting on it. Is this the correct WAC?

WAC 173-219-200 (4) Exemptions:

(a) The capture and redirection of wastewater effluent for facility and internal reuse purposes does not require a reclaimed water permit under this chapter, provided those uses are in restricted areas, are not subject to public exposure, are under the direct control of the generator's or user's authorized maintenance personnel, and are described within an approved operations and maintenance manual.

Comment: How will this be tracked, and what will be the enforcement if there are violations?

WAC 173-219-310 Specific reclaimed water permit conditions

(1) (b) The chemical, biological, physical characteristics of the reclaimed water generated.

Comment: What exactly will the applicant need to evaluate? CEC's are included. Will this include prions? Micro plastics? Radiation? Anti-biotic resistant genes and bacteria? Etc. If it is just what is listed under number (7), this is inadequate monitoring.

(8) Assessment of contaminants of emerging concern or CEC.
*The lead agency **may** include in the reclaimed water permit monitoring for CEC in the reclaimed water, the receiving environment, or both."*

Comment: No. (8) includes CECs, which would include prions and TSE monitoring and which should be a must, not a "may."

Given the known and unknown contents of effluent, the following regulations are not protective:
WAC 173-219-420, WAC 173-219-430 minimum technology-based treatment methods,
WAC 173-219-440 disinfection process standards

WAC 173-219-500 Operational storage of reclaimed water. (3) Storage Design
"Storage capacity design calculations must be **reasonably** consistent with methods..."

Comment: The word "reasonably" is subjective and should be deleted.

WAC 173-219-530 Distribution by transport vehicles. (2) Vehicles transporting hazardous or dangerous waste shall not be used to transport reclaimed water.

Comment: In fact, if this were not claimed to be "beneficial use," the reclaimed water would be hazardous waste.

WAC 173-219-540 Conveying reclaimed water through surface waters of the state
Comment: Does this mean that surface waters can be used as reclaimed water? Or does this mean that effluent can be put into surface waters? This passage is unclear. Please rewrite this section and be specific on this meaning so the general public understands.

WAC 173-219-550 (2)(b) (b)

If potable water is mixed with reclaimed water at a use site, ... Comment:
This should be prohibited. To put the onus on the site owner to ensure all requirements is too risky.

Subpart C Use-Based Requirements
WAC 173-219-550 through 173-210-630

Comment: Whether Class A or Class B, both are highly toxic effluents. Allowing these in public places or in work places simply means these toxic effluents are being permitted to spread into

public places, critical wetland habitat, food crops where the contaminants and pathogens will be absorbed in crops and passed up through the food chain, and recreational sites exposing those recreating to contaminants and pathogens.

This is setting up a potential pandemic disease spreading operation and is irresponsible and unethical. Further, given the lack of potable water now and into the future, reclaimed water should not be blended with potable water as stated in 173-219-580, -590 and elsewhere

Comment: The Legislation does not address cumulative affect and effect.

In this case, and the question at hand of how to recycle the sewage waste water post treatment, clearly the resolutions as proposed in this rule making — apply the effluent to crops, run into streams, and/or wetlands — will only add to the already soil and groundwater toxicity from land applied sewage sludge.

To repeat, why spend public and private monies on this plan when encouragement should be directed towards modern waste to energy choices and long term public energy and financial benefits?

In addition to affirming the detailed concerns, we summarily list these noted deficiencies pertinent to the proposed Reclaimed Water Rule.

*The rule's language, organization, and authority implementation plans seem disjointed and awkward. For example, important definitions such as Class A and Class B are not addressed until a tacked on "technical" subsection. Sometimes DOH will "rule," sometimes DOE. The professed intent to have consistency is NOT verified OR verifiable, when the Rule then goes on to state that already existing owners of permits will not be subject to some of the rule's new requirements. The background of this rule having been started, then interrupted and then pursued again shows that such a piecemeal, resurrection approach should be rejected. What is needed is a new notice of intent, with new public comment and new public hearings IN LOCATIONS where each of the known or proposed 28 reclaimed water projects exist. Reclaimed water uses need to be treated as NPDES permits, with all associated public notice requirements. Did this Rule follow such noticing for all 28 project areas?

*Although the Rule purports to preserve and protect public health, the environment, and water rights, it defines AKART but does not apply it; it includes CECs in definitions, but does not require use of current information and new research to study potential impacts to human health and environment before pursuing some of its proffered "beneficial uses." In discussing concerns about water right impairment, where does it require attention to ALL wellheads – including exempt wells - not just public A or B systems?

*When permits are issued for 5 years at a time, how would the public in an affected watershed be notified if criteria were not met? How could citizens afford the burden of costs for any appeals for cancelling or rejecting an applicant for this Rule? How could they get new good water?

*While water resources with climate change and population pressures may stir the interest in how to replenish or increase sources, this Rule seems premature in advocating new "beneficial uses" of reclaimed waters, **with constituents and impacts still needing study and review.**

Sequim, for example, has several healthcare facilities that “contribute” their waste streams to Sequim’s STP/WRF. Shouldn’t we await the improvements that can come from pending docket # EPA-HQ-RCRA 2007-0932?

ALSO RELEVANT

<http://www.courthousenews.com/2015/06/26/greens-give-epa-a-swift-kick-in-the-butt.htm>

- “inert” ingredients of pesticides (of all FIFRA categories) do not have to be disclosed by manufacturers, even though they could be more toxic than those disclosed, so this inhibits knowing of many chemicals that can be in wastewater

Control of Toxic Chemicals in Puget Sound

Phase 3: Pharmaceuticals and Personal Care Products in Municipal Wastewater and Their Removal by Nutrient Treatment Technologies

Kinney (2006b) concludes there is considerable contaminant loading to the terrestrial environmental from biosolids and reclaimed water

Eastern Washington University scientists, in conjunction with USGS, conducted a study investigating anthropogenic organic contaminants in biosolids, manure, and unimpacted fields

(Kinney et al., 2008)

Bioaccumulation of Pharmaceuticals and Other Anthropogenic Waste Indicators in Earthworms from Agricultural Soil Amended With Biosolid or Swine Manure (Citations: 29)

Chad A. Kinney, Edward T. Furlong, Dana W. Kolpin, Mark R. Burkhardt, Steven D. Zaugg, Stephen L. Werner, Joseph P. Bossio, Mark J. Benotti

Journal: [Environmental Science & Technology - ENVIRON SCI TECHNOL](#) , vol. 42, no. 6, pp. 1863-1870, 2008

They evaluated contaminants in the soils and earthworms. The study found that organic chemicals, including some PPCPs, were introduced into the environment through land application of manure or biosolids. Earthworms continually ingest soils for nourishment and were found to accumulate PPCPs contained in those soils, therefore indicating bioaccumulation of some PPCPs and an introduction to the food chain.

Johnson, A., Carey, B., and Golding, S., 2004. Results of a Screening Analysis for Pharmaceuticals in Wastewater Treatment Plant Effluents, Wells and Creeks in the Sequim-Dungeness Area. Washington State Department of Ecology. Publication No. 04-03-051. www.ecy.wa.gov/biblio/0403051.html . 34 p.

http://toxics.usgs.gov/highlights/pharm_soils/index.html

Pharmaceuticals Found in Soil Irrigated with Reclaimed Water

a team of U.S. Geological Survey (USGS) scientists reported that pharmaceuticals in wastewater used for irrigation persist in soil for several months after the irrigation stopped for the season.

http://toxics.usgs.gov/highlights/tracing_wastewater.html

Tracing Wastewater - Using Unique Compounds to Identify Sources of Contamination



Discharge from a wastewater treatment plant on Fourmile Creek, Iowa. USGS scientists have been studying the fate and transport of emerging contaminants in the creek and their potential use as indicators of wastewater contamination
(Click on photo for larger version)

U.S. Geological Survey (USGS) and U.S. Environmental Protection Agency (EPA) scientists have shown that wastewater treatment plants are a significant source of pharmaceuticals and other emerging contaminants to rivers. A recent study analyzed treated wastewater being discharged to rivers from 10 wastewater treatment plants (sewage treatment plants) for 110 emerging contaminants, and found between 28 and 50 of these compounds in the wastewater. Commonly detected compounds included antimicrobial disinfectants (triclosan), antibiotics (sulfamethoxazole), musk fragrances (tonalide), antihistamines (diphenhydramine), and antiepileptic drugs (carbamazepine). After analyzing water-quality samples that were collected upstream and downstream of the treatment plants, the scientists determined that wastewater treatment plants are a significant source of emerging contaminants in the streams that were sampled

<http://sustainablepulse.com/2015/06/16/pope-francis-slams-gmos-and-pesticides-for-environmental-and-social-damage/#.VZNbn1LnmiA>

CITATIONS

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3. a. <http://www.watoxics.org/news/pressroom/press-releases/first-of-its-kind-study-finds-toxic-flame-retardants-from-consumer-products-are-significant-source-of-pollution-to-waterways/>
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17. <http://www.nature.com/nature/journal/v525/n7568/pdf/nature15369.pdf>
Evidence for human transmission of amyloid-b pathology and cerebral amyloid angiopathy ...iatrogenic transmission of A-beta pathology in addition to CJD and suggests that healthy exposed individuals may also be at risk of iatrogenic Alzheimer's disease and cerebral amyloid angiopathy. These findings should also prompt investigation of whether other known iatrogenic routes of prion transmission may also be relevant to A-beta and other proteopathic seeds associated with neurodegenerative and other human diseases.

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