

## Brendan Clark

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**From:** David Broadwater <csi@thegrid.net>  
**Sent:** Friday, October 23, 2020 12:40 PM  
**To:** Brendan Clark  
**Cc:** apease\_slocity.org  
**Subject:** [EXT]Sewage Sludge Land Application Ordinance Extension / BofS 12-15-20  
**Attachments:** 1.7 Contents.pdf

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SLO Co. WRAC:

Notice: Sewage Sludge Land Application Ordinance Extension  
SLO County Board of Supervisors  
December 15, 2020  
Agenda Item: Extend Interim Moratorium until 2026

I have been informed by the Director of Environmental Health Services Division (EHSD) of the SLO County Public Health Department, Elizabeth Pozzebon, that the EHSD plans to recommend that the County Board of Supervisors (BofS) extend the current Interim Moratorium Ordinance on Sewage Sludge Land Application until 3-31-26, a five-year extension beyond its 3-31-21 expiration date. The plan is to introduce the proposed extension to the BofS on 11-17-20, recommending that the extension be placed on the 12-15-20 BofS Agenda. Of course, it's possible that other pressing matters may arise requiring the BofS to reschedule the hearing, so certainty regarding the timing will come closer to those planned dates.

So, this email is intended as a heads up for those organizations which may need time to place this matter on their agendas, if so desired.

This ordinance has been extended a number of times since 2004 with the participation and approval of numerous agricultural, environmental and civic organizations. Although it technically allows land application of sewage sludge, anyone who desires to apply more than five cubic yards of the material must secure a permit from the EHSD, and certify that it meets certain contaminant concentration limits. The ordinance places an annual limit of 1,500 cubic yards of sewage sludge that may be land applied in any year. Since, 2004, the EHSD has received no applications for a permit to conduct this activity in SLO County, so it has become known as an "effective ban". (see below for a link to the current ordinance)

The proximate reason for the length of this extension (five years is the longest yet) appears to be a 7-9-20 order issued by the State Water Resources Control Board (SWRCB) to all California sewage treatment plants (POTWs - Publicly Owned Treatment Works) to sample the plant's influent, effluent and sewage sludge for PFAS chemicals, have their prevalence and concentration analyzed by laboratories, and report the findings to the SWRCB. This order was cited by the EHSD Director in her notice about the impending BofS hearing on ordinance extension. The SLO County POTWs listed in the SWRCB Order are those in: Cambria, Pismo Beach, South SLO County, Morro

Bay/Los Osos, Paso Robles, San Luis Obispo, Atascadero, and the Los Osos Water Recycling Facility. Whether this leads to the promulgation of new standards and limits, and a rule-making process, on the concentrations of PFAS compounds permitted in land applied sewage sludge is unknown at this point. (see below for a link to the SWRCB Order)

PFAS pollutants have been a serious concern among health professionals, the scientific community, and environmental organizations for years (including those resisting sewage sludge land application) due to their ubiquitousness, environmental persistence and bioaccumulation. For background, here are some excerpts from the SWRCB Order:

#### A. WHAT ARE PFAS?

PFAS are a family of more than 5,000 man-made and mostly unregulated chemicals that have been produced since the mid-1900s. They are mobile, persistent, and bioaccumulative. They are resistant to degradation in the environment and when degradation occurs, it often results in the formation of other PFAS compounds. The PFAS compounds have very different physical and chemical properties. Currently, the key classes of concern are perfluoroalkyl sulfonic acids such as the long-chain perfluorooctanesulfonate (PFOS) and perfluorooctanoic acid (PFOA).

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PFAS are extremely persistent in the environment and highly mobile in water. People can be exposed to PFAS through food, food packaging, consumer products, house dust, and drinking water. Since these chemicals have been used in an array of consumer products, scientists have found PFOA and PFOS and other PFAS compounds in the blood of nearly all people tested. Exposure through drinking water has become an increasing concern due to the tendency of PFAS to accumulate in groundwater.

Based on current available peer-reviewed studies on laboratory animals and epidemiological evidence in human populations, the U.S. EPA released the following statement:

“These studies indicate that exposure to PFOA and PFOS over certain levels may result in adverse health effects, including developmental effects to fetuses during pregnancy or to breastfed infants (e.g., low birth weight, accelerated puberty, skeletal variations), cancer (e.g., testicular, kidney), liver effects (e.g., tissue damage), immune effects (e.g., antibody production and immunity), thyroid effects and other effects (e.g., cholesterol changes).”

In her notice of the upcoming BofS hearing, the EHSD Director also cited the 11-15-18 U.S. EPA OIG (Office of Inspector General) report, "EPA Unable to Assess the Impact of Hundreds of Unregulated Pollutants in Land-Applied Biosolids on Human Health and the Environment". This report demonstrates that PFAS contaminants are not the only unregulated and dangerous pollutants in sewage sludge. The EPA OIG issued a full 66-page report and a 1-page brief on its findings, conclusion and recommendations. (see below for links to both) Here's the opening paragraph from the brief:

#### What We Found

The EPA's controls over the land application of sewage sludge (biosolids) were incomplete or had weaknesses and may not fully protect human health and the environment. The EPA consistently monitored biosolids for nine regulated pollutants. However, it lacked the data or risk assessment

tools needed to make a determination on the safety of 352 pollutants found in biosolids. The EPA identified these pollutants in a variety of studies from 1989 through 2015. Our analysis determined that the 352 pollutants include 61 designated as acutely hazardous, hazardous or priority pollutants in other programs.

Attached, is a 4-page fact sheet titled "Sewage Sludge Contents / Tip of Iceberg" listing a number of its ingredients in six categories: Heavy Metals; Pathogens; Synthetic Chemicals; Hydrocarbons, Petrochemicals, Organochlorines; Pharmaceuticals; and Steroids & Hormones; and 16 references from which the list was derived. They are concentrated in sewage sludge in an attempt to extract them from the sewage plant influent, so that its effluent is relatively cleaner.

Based on the EHSD Director's email notice and the phone conversation I had with her, I'm inclined to support the recommendation which seems to be forthcoming, i.e., to extend the current ordinance for five years. That will depend, however, on the content of the submissions the EHSD provides to the BofS. I encourage others to take notice of this impending decision and its implications for our county's health, agricultural viability and environment, and to share this information with others who may be so concerned, including forwarding this email to members of organizations to which you may belong. I will do my best to keep folks informed as the BofS hearing nears.

Thank you for your attention to this matter. For sixteen years, community involvement and collaboration have, so far, protected us from unnecessary contamination of our land, water, air and bodies. With your help, that can continue.

David Broadwater  
Center for Sludge Information  
Atascadero

SLO County Interim Moratorium Ordinance:

[https://library.municode.com/ca/san\\_luis\\_obispo\\_county/codes/county\\_code?nodeId=TIT8HESA\\_CH8.13LAAPTRSESLBI](https://library.municode.com/ca/san_luis_obispo_county/codes/county_code?nodeId=TIT8HESA_CH8.13LAAPTRSESLBI)

SLO County Municipal Code

**Chapter 8.13 - LAND APPLICATION OF TREATED SEWAGE SLUDGE/BIOSOLIDS**

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SWRCB Order:

[https://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2020/wqo2020\\_0015\\_dwq.pdf](https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2020/wqo2020_0015_dwq.pdf)

California Department of Water Quality  
State Water Resources Control Board

**WATER CODE SECTIONS 13267 AND 13383 ORDER FOR THE DETERMINATION OF THE PRESENCE OF PER- AND POLYFLUOROALKYL SUBSTANCES AT PUBLICLY OWNED TREATMENT WORKS  
ORDER WQ 2020-0015-DWQ**

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U.S. EPA OIG Report:

Complete Report (66 page)

[https://www.epa.gov/sites/production/files/2018-11/documents/epaig\\_20181115-19-p-0002.pdf](https://www.epa.gov/sites/production/files/2018-11/documents/epaig_20181115-19-p-0002.pdf)

U.S. Environmental Protection Agency

Office of Inspector General

**EPA Unable to Assess the Impact of Hundreds of Unregulated Pollutants in Land-Applied Biosolids on Human Health and the Environment**

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Brief (1 page)

[https://www.epa.gov/sites/production/files/2018-11/documents/epaig\\_20181115-19-p-0002\\_glance.pdf](https://www.epa.gov/sites/production/files/2018-11/documents/epaig_20181115-19-p-0002_glance.pdf)

U.S. Environmental Protection Agency

Office of Inspector General

At a Glance

**EPA Unable to Assess the Impact of Hundreds of Unregulated Pollutants in Land-Applied Biosolids on Human Health and the Environment**

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# Sewage Sludge Contents / Tip of Iceberg

Heavy Metals, Pathogens, Synthetic Chemicals, Hydrocarbons, Petrochemicals & Organochlorines, Pharmaceuticals, Steroids & Hormones.

This list of contents represents only the "tip of the iceberg" of toxics concentrated in sewage sludge. Federal and most state and local land application regulations limit concentrations of only nine heavy metals and one "indicator" pathogen in land applied sewage sludge (in **BOLD**).

## Heavy Metals [1, 2]

Aluminum,	Dysprosium,	<b>MERCURY,</b>	Tantalum,
Antimony,	Erbium,	<b>MOLYBDENUM,</b>	Tellurium,
<b>ARSENIC,</b>	Europium,	<b>NICKEL,</b>	Terbium,
Barium,	Gadolinium,	Niobium,	Thallium
Beryllium,	Germanium,	Palladium,	Thorium,
Bismuth,	Gold,	Praseodymium,	Thulium,
Boron,	Hafnium,	Rhodium,	Tin,
Bromine,	Holmium,	Rubidium,	Titanium,
<b>CADMIUM,</b>	Iron,	Ruthenium,	Tungsten,
Cerium,	Lanthanum,	Samarium,	Uranium,
Cesium,	Lutetium,	Scandium,	Vanadium,
Chromium,	<b>LEAD,</b>	<b>SELENIUM,</b>	Yttrium,
<b>COPPER,</b>	Magnesium,	Silver,	Ytterbium,
Cobalt,	Manganese,	Strontium,	<b>ZINC</b>

## Pathogens [3, 4, 5, 11, 15]

### Bacteria

#### **FECAL COLIFORM,**

Salmonella (2,000 types),  
Shigella (4 spp.),  
E. coli 0157:H7,  
Staphylococcus aureus,

#### **Viruses**

Adenovirus, Astrovirus,  
Calciavirus, Coronavirus,  
Enterovirus (Poliovirus),

#### **Protozoa**

Cryptosporidium,  
Entamoeba histolytica,  
**Helminths** (Parasites)

Ascaris lumbricoides  
(roundworm),  
Ancylostoma duodenale  
(hookworm), Necator  
americanus (hookworm),

#### **Fungi**

Aspergillus fumigatus,  
Candida albicans,  
Cryptococcus neoformans,

**Prions** (spongiform encephalopathy)

Enteropathogenic E. coli,  
Yersinia enterocolitica,  
Campylobacter jejuni,  
Vibrio cholera, Leptospira,  
Listeria, Helicobacter,

Coxsackie A, Coxsackie B,  
Echovirus, Enterovirus 68-  
72), Hepatitis A virus,

Giardia lamblia,  
Balantidium coli,

Tainia saginata (tapeworm),  
Trichuris (whipworm),  
Toxocara (roundworm),  
Strongyloides (threadworm),  
Ascaris suum,

Epidermophyton spp.,  
Trichophyton spp.,  
Trichosporon spp.,

Mycobacteria, Aeromonas,  
Legionella, Burkholderia,  
Endotoxins,  
antibiotic resistant bacteria,

Hepatitis E virus,  
Norwalk virus,  
Reovirus, Rotavirus

Toxoplasma gondii

Toxocara canis,  
Taenia solium,  
Hymenolepis nana

Phialophora spp.,

While Federal law and regulations limit none of contents below, they allow localities to set more restrictive limits on sewage sludge and soil contamination. Some states do so &/or permit precautionary local control, and others do neither.

Once spread on land, the contaminants above and below persist for centuries - to decades - to months affecting soil, water, plants, air, animals and people.

Unlike pesticides (distinct chemicals subject to specific analysis), sewage sludge is a very complex, variable and concentrated mixture of the vast multitude of unstudied and unregulated hazardous wastes dumped into sewer systems.

## Synthetic Chemicals [2, 6, 7, 8, 9, 12, 16]

### Dioxins & Furans

Dioxins,	2,3,4,6,7,8- Hexachlorodibenzo-Furan,
Octachlorodibenzo-P-Dioxin,	1,2,3,4,7,8,9-Heptachlorodibenzo-Furan,
1,2,3,4,6,7,8-Heptachlorodibenzo-P-Dioxin,	2,3,4,7,8-Pentachlorodibenzo-Furan,
Octachlorodibenzo Furan, 1,2,3,4,6,7,8-	1,2,3,4,7,8- Hexachlorodibenzo-P-Dioxin,
Heptachlorodibenzo-	1,2,3,7,8- Pentachlorodibenzo-Furan,
Furan (71), 2,3,7,8-Tetrachlorodibenzo-Furan,	1,2,3,7,8- Pentachlorodibenzo-P-Dioxin,
1,2,3,6,7,8-Hexachlorodibenzo-P-Dioxin,	1,2,3,7,8,9- Hexachlorodibenzo-Furan,
1,2,3,4,7,8-Hexachlorodibenzo-Furan ,	2,3,7,8- Tetrachlorodibenzo-P-Dioxin,
1,2,3,7,8,9- Hexachlorodibenzo-P-Dioxin,	Polychlorinated Dibenzodioxin/Polychlorinated Di-
1,2,3,6,7,8-	benzofuran (PCDD/PCDF), Tetrahydrofuran, 2,4-
Hexachlorodibenzo-Furan,	D, 2,4,5-T, dioxin (TCDD),

### "Organics" (carbon-based)

Acetone, Chloroform,	2,2'-methylenebis[4-methyl-	N-Tetradecane,
Cyclohexanone,	6- nonyl-Phenol, p-	N-Triacontane,
Bis(2-ethylhexyl) Phthalate,	Nonylphenol, 4,4'-	N-Eicosane, N-Hexadecane,
Bis(2-ethylhexyl)	butylidenebis[2-(1,1-	N-Octacosane,
tetrabromophthalate,	dimethylethyl)-5-methyl-,	Carbon Disulfide,
Di-n-undecyl phthalate,	4-Methylphenol,	N-Decane, N-Docosane,
Alkyl benzyl Phthalate, Di-(2-	Phenol, 4,4'-(1-	N-Octadecane, P-Cymene,
Ethylhexyl) Phthalate	methylethylidene)bis[2-(1,1-	Benzo(B)fluranthene,
(DEHP), Butyl Benzyl	dimeth,	Fluoranthene,
Phthalate, Toluene,	Phenol, 4,4'-(1-	P-Chloroaniline,
2-Propanone,	methylethylidene)bis[2-(1,1-	Pyrene, Tetrachloromethane,
Methylene Chloride,	dimeth,	Trichlorofluoromethane, 2-
Hexanoic Acid,	2,4-dicumylphenol,	Hexanone,
2-Butanone, Methyl Ethyl	p-Dodecylphenol, 2,4,5-	2-Methylnaphthalene,
Ketone, Alcohol Ethoxylate,	Trichlorophenol,	4-Chloroaniline,
Alkylphenoethoxylates,	N-Hexacosane,	Benzo(a)pyrene
Phenol, Nonylphenol,	N-Tetracosane, N-Dodecane,	

### Pesticides & Insecticides

Aldrin, Chlordane,	Acetic Acid (2,4-	Pentachloronitrobenzene,
Cyclohexane, Heptachlor,	Dichlorophenoxy),	Chlorobenzilate, Beta-BHC,
Endosulfan, Endosulfan-II,	2,4,5-	Kepone, Mirex,
Lindane, Dieldrin, Endrin,	Trichlorophenoxypropionic	Methoxychlor,
DDT, DDD, DDE, 2,4,5-	Acid,	
Trichlorophenoxyacetic Acid,		

### PCBs (PolyChlorinated Biphenyls)

PCB-1016,	PCB-1232,	PCB-1248,	PCB-1260
PCB-1221,	PCB-1242,	PCB-1254,	

### PBDEs (PolyBrominated Diphenyl Ethers)

BDE-28,	BDE-85,	BDE-138,	BDE-183,
BDE-47,	BDE-99,	BDE-153,	BDE-209,
BDE-66,	BDE-100,	BDE-154,	

## Hydrocarbons, Petrochemicals, Organochlorines [7, 8, 9, 10, 12, 16]

PCBs, PCT, PBB, PBT,  
Anthracene,  
Pentachlorophenol,  
Benzo(g,h,i)perylene,  
Benzene, Benzene,  
C14-C24-branched,  
Polyethylbenzene  
residue, Octane,  
Hexachlorobenzene,  
Ethylbenzene,

Chlorinated Benzenes,  
Naphtha (petroleum),  
turpentine-oil,  
Hydrotreated kerosene,  
Hydrocarbon oils,  
Hydrocarbons, C10 and  
C12, Distillates  
(petroleum), Fuel oil,  
Creosols, P-Cresol, O-  
Cresol,

2-(2H-Benzotriazol-2-yl)-p-cresol,  
Hexachlorobutadiene,  
N-Nitrosodimethylamine,  
Toxaphene, Trichloroethane,  
Tetrachloroethane, Hexachloroethane,  
Carbon Tetrachloride, Dichloroethylene,  
Trichloroethylene, Tetrachloroethylene,  
Xylene,

## Pharmaceuticals [2, 12, 16]

1,7-Dimethylxanthine,  
4-Epianhydrochlortetracycline,  
4-Epianhydrotetracycline,  
4-Epichlortetracycline,  
4-Epioxytetracycline,  
4-Epitetracycline,  
Acetaminophen,  
Albuterol,  
Anhydrochlortetracycline,  
Anhydrotetracycline,  
Azithromycin,  
Caffeine,  
Carbadox,  
Carbamazepine,  
Cefotaxime,  
Chlortetracycline,  
Cimetidine,  
Ciprofloxacin,  
Clarithromycin,  
Clinafloxacin,  
Cloxacillin,  
Codeine,  
Cotinine,  
Dehydronifedipine,  
Demeclocycline,  
Digoxigenin,

Digoxin,  
Diltiazem,  
Diphenhydramine,  
Doxycycline,  
Enrofloxacin,  
Erythromycin-Total,  
Flumequine,  
Fluoxetine,  
Gemfibrozil,  
Ibuprofen,  
Isochlortetracycline,  
Lincomycin,  
Lomefloxacin,  
Metformin,  
Miconazole,  
Minocycline,  
Naproxen,  
Norfloxacin,  
Norgestimate,  
Ofloxacin,  
Ormetoprim,  
Oxacillin,  
Oxolinic Acid,  
Oxytetracycline,  
Penicillin G,  
Penicillin V,

Ranitidine,  
Roxithromycin,  
Sarafloxacin,  
Sulfachloropyridazine,  
Sulfadiazine,  
Sulfadimethoxine,  
Sulfamerazine,  
Sulfamethazine,  
Sulfamethizole,  
Sulfamethoxazole,  
Sulfanilamide,  
Sulfathiazole,  
Tetracycline,  
Thiabendazole,  
Triclocarban,  
Triclosan,  
Trimethoprim,  
Tylosin,  
Virginiamycin,  
Warfarin,

## Steroids & Hormones [2,12, 16]

17 Alpha-Dihydroequilin,  
17 Alpha-Estradiol,  
17 Alpha-Ethinyl-Estradiol,  
17 Beta-Estradiol,  
Androstenedione,  
Androsterone,  
Beta Stigmastanol,  
Campesterol,  
Cholestanol,

Cholesterol,  
Coprostanol,  
Desmosterol,  
Epicoprostanol,  
Equilenin,  
Ergosterol,  
Estriol,  
Estrone,  
Ethinylestradiol,

Norethindrone,  
Norgestrel,  
Progesterone,  
Stigmastanol, Sitostanol,  
Beta-Estradiol 3-Benzoate,  
Beta-Sitosterol,  
Equilin,  
Testosterone,

“Acceptable” levels of exposure to sewage sludge contaminants are based on obsolete and faulty scientific data and processes. In 2002 and 2010, the National Academy of Sciences and National Institutes of Health established those facts [13, 14].

The risk assessments upon which these levels are based neglected dietary impacts on children; multi-pathway exposure; synergistic impacts; infectious organism exposure; ecological, wildlife, food chain, soil microorganism & forest soil impacts; long-term heavy metal accumulation; and used a cancer risk safety factor 100 times less protective than used for air and water pollution.

#### References:

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2. Targeted National Sewage Sludge Survey, Statistical Analysis Report, January 2009, U.S. Environmental Protection Agency, Office of Water (4301T), EPA-822-R-08-018 (<http://www.epa.gov/waterscience/biosolids/tncss-stat.pdf>).
3. “Hazards from Pathogenic Microorganisms in Land-Disposed Sewage Sludge” T.M. Straub, I.L. Pepper & C.P. Gerba, Dep't. of Soil & Water Science, U. of Ariz.: Reviews of Environmental Contamination & Toxicology, vol 132, 1993.
4. “Biosolids Applied to Land: Advancing Standards and Practices”, National Research Council, July 2002, Committee on Toxicants and Pathogens in Biosolids Applied to Land, Board on Environmental Studies and Toxicology, Division on Earth and Life Studies, National Research Council, National Academy Press.
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14. “Reducing Environmental Cancer Risk - What We Can Do Now”, President’s Cancer Panel, 2008–2009 Annual Report, National Institutes of Health/National Cancer Institute, April 2010.
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