



UTAH PHYSICIANS
for a HEALTHY ENVIRONMENT

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Utah Physicians for a Healthy Environment (UPHE) is one of the largest civic organizations of healthcare professionals in the Western United States. We have been engaged in numerous environmental and public health policy issues at local, state, national, and international levels since our inception in 2007. We specialize in knowing the medical research on how various kinds of environmental degradation impact public health, and we have particular expertise in air pollution and environmental chemical exposures.

We have been contacted by residents in Southern Utah who are concerned about HR 3073 and S 1508 that pave the way for three luxury golf courses and related developments on Shivwits Sacred Lands near the town of Ivins. One of their primary concerns is the hazards of the chemicals that will be used, coming from both the secondary water applied to irrigate the courses, and the pesticides that golf courses depend on to maintain them. We support their concerns as we explain below.

Water discharged from municipal treatment plants, i.e. secondary water, is highly contaminated with essentially all the toxic byproducts of modern civilization. Every environmental toxin that goes into a modern sewage system will contaminate the water discharged from the treatment plant. There are anywhere from 80,000 to 140,000 industrial chemicals that make it into municipal sewage, sewage treatment plants, and the discharge wastewater.

These plants are designed for organic and nutrient removal from municipal sewage water and not for removal of micropollutants like pesticides, PFAS compounds, pharmaceutical metabolites, nanoparticles of heavy metals, and the myriad chemicals in industrial and municipal sewage.¹ Indeed about 40% of this overall contamination will end up in the effluents of the plants and in this “secondary” water.^{2,3} Moreover, during the wastewater processing and treatment of sludge, many toxins can form intermediate products, often more toxic than the original compounds.⁴

At the top of the list of toxic chemicals in secondary water is PFAS, or “forever chemicals.” They are likely the most toxic chemicals ever intentionally produced, proven to cause a wide range of poor health outcomes including cancer. Dupont, the original manufacturer of PFAS chemicals, concluded there was no safe level of exposure, which they hid from the EPA for many years. In 2022, the EPA set drinking water guidelines for the two main categories of PFAS compounds at 0.02 parts per trillion and 0.004 parts per trillion. That’s the equivalent of one drop of water in a lake the size of six Rose Bowl stadiums in the first case and one drop of water in a lake the size of 30 stadiums in the second case. Numerous studies confirm that PFAS concentrations are actually higher in the discharge than in the intake.^{5,6}

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Recently the CDC made an unprecedented recommendation that physicians consider testing patients' blood for forever chemicals. That they have never made such a recommendation for any other toxic substances speaks volumes. There is no treatment for PFAS contamination, so their purpose was to see if some communities have unrecognized PFAS sources, and if some patients have personal exposures that can be eliminated.

Pesticides are an unfortunate, but ubiquitous part of routine maintenance of golf courses. As a chemical class they are also toxic to wildlife and humans. But even worse, they are also often contaminated with PFAS chemicals either as an ingredient added to increase their environmental life span, as part of the active ingredient, or a contaminant leached from storage containers. Nearly 70% of all pesticides introduced for commercial sale between 2015 and 2020 were found to be contaminated with PFAS/PFOS compounds, adding an entirely new dimension to their toxic profile.⁷

Plastic pollution is one of the most serious and vexing environmental hazards in the 21st century. Microplastic and nanoplastic particles (MNPs) contaminate the broad environment because they were intentional additives to numerous consumer products, i.e. primary particles, or the result of breakdown of larger plastics fragments, i.e. secondary particles. Mechanical breakdown of microplastics from water shear induced by treatment facilities that includes pumping, mixing, and bubbling is likely a major contributor to the presence of MNP in the effluent from these plants.⁸

Plastic particles cause mechanical friction and physical injury when infiltrating bodily tissue via inhalation or ingestion. They represent a chemical hazard as well because they often have embedded in them a variety of chemicals such as PFAS, BPA, polyethylene, polypropylene, and phthalates used to give the plastic specific properties including strength, flexibility, durability, stiffness, or a scent. These chemicals have their own toxic potential, and many of them are endocrine disruptors meaning they are toxic at extremely low concentrations.

All major organ systems - the lungs, heart and cardiovascular system, liver, kidneys, immune and endocrine systems- are likely damaged to varying degrees by contamination with plastic nanoparticles.⁹ And while there are many routes of exposure, anyone living near golf courses irrigated with secondary water will be exposed acutely and chronically to an extra source of these contaminants.

There are too many other toxic heavy metals and chemicals in the discharge of sewage treatment plants to detail all of them in this letter. Exposure of nearby residents from this secondary water can be assumed from two sources. Water sprayed in a sprinkler system over the golf courses, and eventually these contaminants will reach any nearby ground water, permanently contaminating it.

On the basis of public health risk, we urge you to vote no on any bills intended to facilitate this luxury golf complex.

Sincerely,

Brian Moench, MD.

Dr. Brian Moench,
President, Utah Physicians for a Healthy Environment

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