



NO REALLY... WHAT IS IN THE WASTEWATER?

BY KYLE BOGGS

IMAGE BY
MIKE FRANKEL



By denying a hearing of the case encompassing local tribe's religious and cultural imperatives to protect the San Francisco Peaks in June of this year, the US Supreme Court reaffirmed two things. It upheld the Ninth Circuit Court of Appeals 2008 decision to allow SnowBowl to expand its operations as well as make artificial snow from the city's treated effluent.

"It means that the San Francisco Peaks, sacred to so many tribes, will continue to be at great risk from the development approved by the Forest Service ... It also means that the Ninth Circuit's narrow interpretation of the Religious Freedom Restoration Act — an interpretation which in practice will make the law virtually unavailable to protect sacred lands in the states covered by the Ninth Circuit — will stand," said Jack Trope of the Association on American Indian Affairs.

It also reaffirmed something local tribes already knew, which is that the world view guiding western law is structurally incapable of protecting the needs and interests of people whose religious and cultural identity are tied directly to the land. Don Watahomigie, Chairman of the Havasupai Tribe asked, "Where do native people stand now in relation to the federal government when laws passed like RFRA don't hold water?" The way the law compartmentalizes these concerns, tribes and environmental groups have been forced to try one argument and then the other, as if human rights and environmental justice weren't related. Media spokesperson for the Save the Peaks Coalition, Rudy Preston agrees: "Because of the environmental arguments, there is a religious argument."

Because the courts have consistently dismissed the arguments by native people to protect the San Francisco Peaks on the grounds of religious and cultural integrity, on September 21, the Save the Peaks Coalition and nine citizens embarked a different strategy. The group has filed a lawsuit calling for the Forest Service

to consider the growing public health concerns regarding the safety of using treated effluent to create artificial snow.

According to the Save the Peaks Coalition, "The use of reclaimed sewer water to make snow was not only repulsive to people who hold the San Francisco Peaks sacred, it raised concerns from skiers and the community over the safety of being immersed in, and even eating, snow made from non-potable treated sewage effluent."

The suit cites the National Environmental Policy Act, arguing that the Forest Service is obligated to consider potential impacts treated effluent will have on the quality of the life in the surrounding area. According to the suit, the Forest Service ignored the possibility of human ingestion of snow made from treated effluent in its Final Environmental Impact Statement.

SnowBowl's General Manager J.R. Murray and others have been quoted both in testimony and in the media as asserting that treated effluent is not only safe enough to drink, but also cleaner than the water that falls from the sky. This claim is substantiated by the current standards for treating and grading wastewater.

"According to the Arizona Department of Environmental Quality regulations, treated sewer water can be graded A+ even when it contains fecal matter in three out of every ten samples," says Dr. Abraham Springer, an NAU professor and director of the School of Earth Science and Environmental Sustainability, "The treated wastewater can meet all applicable water quality standards, but still not be as high of quality as precipitation."

The claim also does not take into account pollutants that wastewater treatment plants either don't test for regularly, or don't test for at all. Studies of wastewater across the country have found compelling evidence of pharmaceuticals, hormones, endocrine disrupters, industrial pollutants, and narcotics.

Beyond the City of Flagstaff's own

evaluations of treated effluent, the only thorough tests that have been completed on the water discharged from Flagstaff's two treatment facilities has been conducted by NAU biological sciences professor Dr. Catherine Propper. Her studies revealed more about the content of the water than what the City's tests currently require.

"In the last 100 years, humans have introduced hundreds of new, synthetic compounds into the environment," Dr. Propper states in her study on endocrine disrupting compounds. "How these compounds ultimately influence physiology and fitness of individual organisms, dynamics of populations, and ultimately functioning of ecosystems, is not well understood."

Endocrine disrupting compounds, which Dr. Propper has found to exist in fish and other forms of life downstream from the City of Flagstaff's wastewater treatment plants, "disrupt physiological processes, including development, reproduction, general metabolism and behavior."

Further, her studies have exposed compelling evidence of skewed sex ratios, whereby 100% or nearly 100% of a given population of animals exposed to treated effluent is female. She has also observed dramatic increases of newborn species in testing areas born hermaphroditic, that is, male fish with evidence of eggs developing in their testicular tissue or male fish that produce female yolk protein. Because the City is not required to test for pharmaceuticals, these findings suggest high levels of estrogen in the water.

The Forest Service dismissed the studies conducted by Dr. Propper, claiming the research is "inconclusive," that to study the affects of fish submerged in treated effluent cannot be compared to children skiing on top of it. It was perhaps easy for the Forest Service to dismiss Dr. Propper's arguments, because no other studies have been conducted on the content of Flagstaff's treated effluent. In its Final Environmental Impact Statement, however, it

did point toward the strong possibility of other toxins that are likely to be present: "Industrial, commercial, and household discharges can contribute inorganic constituents to wastewater which may inhibit the effectiveness of wastewater treatment or may pass through the process without treatment or removal."

Still, Dr. Propper warned at an Endocrine Disrupter Screening Project at NAU, in collaboration with the US Geological Survey, "... be very concerned if anyone were to drink the reclaimed water." It is also important to remember that Dr. Propper's research has been solely geared toward analyzing and synthesizing data regarding endocrine disrupting compounds. Studies of wastewater treatment facilities across the country have revealed many more pollutants.

Nationwide, water treatment facilities have been plagued by the following industrial wastes: antimony, mercury, chromium, cadmium, lead, dioxins, flame-retardants, antifreeze, insecticides, and pesticides. Health risks associated with industrial contaminants like these are cancer, birth defects, brain damage, immune suppression, and fertility reduction.

And for those who may believe Flagstaff — the hip, clean city that it is — is immune to such problems, it is worth pointing out that, just last year, the Environmental Protection Agency cited Flagstaff's Wildcat Treatment Plant with high levels of cyanide and selenium.

While the extremely poisonous compound, cyanide, needs no introduction, readers might not be familiar with selenium. Dr. Paul Torrence, former NAU professor and renowned expert in the field of bioorganic and medicinal chemistry, explains: "Selenium can be beneficial at certain low levels in cancer prevention, but although selenium is required for health, like other nutrients, high doses of selenium can be toxic. Acute and fatal toxicities have occurred with accidental or suicidal ingestion of gram quantities of selenium. Chronic selenium

toxicity (selenosis) may occur with small doses of selenium over long periods of time."

Recent studies have prompted mounting vigilance on the effects pharmaceuticals and personal care products have on the level of toxicity in wastewater. In these studies, scientists have found oral contraceptives and other hormones, human and veterinary antibiotics, anti-seizure medication, antihistamines, caffeine, codeine, steroids, fragrances, and bio-accumulating compounds often found in antibacterial products, namely triclosan and triclocarbans.

Triclosan and **triclocarbans**, in particular, have received media attention of late. Chances are, readers have at least one product that contains this compound, as it is found in a score of products, ranging from anti-bacterial soaps, toothpaste, deodorants, and face washes. Several products that contain triclosan are labeled as "eco-friendly" or "all natural" despite evidence that it is a toxin. When triclosan reacts with chloride, it becomes chloroform, which is a cancer-causing carcinogen. When it reacts with ultra-violet rays, it forms different, mega-carcinogens, in the form of poisonous dioxins. This is why the **Canadian Medical Association** has called for an outright ban of triclosan.

Mr. Preston remarked, regarding the probability of triclosan in the City's wastewater, "if they put this up on the Peaks at 12,000 feet, where the UV rays are strong, it will create a PBC 'brown field,'" which is essentially when the land becomes so contaminated it is incapable of supporting life.

Because the City's wastewater facilities are not required to test for pharmaceuticals and compounds found in personal care products, it is not known whether they are present in the water. **Howard Shanker**, attorney for the Save the Peaks Coalition and the nine citizens who filed the lawsuit, argues: "The Forest Service failed to adequately consider the impacts of potential human ingestion of snow made

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from reclaimed sewer water as required by applicable law, under the National Environmental Policy Act. Our government should not be approving such projects without some sort of understanding of the anticipated impacts."

Of course there are ski facilities across the country that artificially make snow and some even use a percentage of treated effluent to do so. What makes SnowBowl's proposal so unique is the precedent it sets. If allowed, SnowBowl would be the only ski facility in the world that would use 100% treated effluent to artificially create snow. Mr. Shanker continues: "By approving treated sewage effluent for snowmaking without adequate analysis, the government essentially turns the ski area into a test facility with our children as the laboratory rats. That is unconscionable."

The lawsuit was filed in order to force the

government to study and disclose the effects of human ingestion of snow made from treated effluent. However, when speaking of a delicate eco-system on a sacred mountain, the concerns go much further than human ingestion.

According to Dr. Springer's hydrologic analysis of **Hart Prairie** and the Peaks, and investigations of the rare **Bebb Willows** that grow there, he made the following observations:

The aquifers at Hart Prairie are predominantly filled with snowmelt from higher elevations. One aquifer drains into another, eventually feeding into the **Verde River**. The Verde is already one of Arizona's most threatened rivers. The water and nutrients it carries literally feeds species spanning 200 miles. The effects of wastewater introduction to this river are not known, as tests have never been accomplished.

Beyond Bebb Willows, the Peaks are home to many different endangered species of plants, some of which are not found anywhere else in the world. And while humans might be able to choose to eat the snow made from treated sewage effluent, there are scores of nonhuman animals that don't have a choice.

Dr. Torrence reiterated this point, "They will just say, 'don't eat the snow!' God help the creatures that have to."

Klee Benally of the Save the Peaks Coalition explained a moral and political doctrine called the **precautionary principle**. In science, the precautionary principle essentially states that "if an action or policy might cause severe or irreversible harm to the public or to the environment," it should not continue in the absence of scientific consensus. Mr. Benally believes the principle isn't being followed in the current Peaks decision. He asks, "What kind of safeguards are there to protect against irreparable damage to humans and the environment?"

The precautionary principle is underscored in the current lawsuit, as the burden of proof should fall on those who wish to implement something new. He continues, "We have consistently asked, 'what happens if people ingest the water?' So far, there have been no meaningful answers."

Dr. Torrence put it in perspective. "Sadly our society and its blinded courts cannot see anything except a smoking gun - when it is too late."

It has come to light the e-coli contaminated spinach from last year was packed with ice made from treated effluent, and the tomatoes contaminated before that were irrigated with the same water, all graded A+ by their local facilities. We know that cancer has just surpassed heart disease as the leading cause of death in this country.

The bigger issues raised by the questions in this lawsuit are more than religious concerns or isolated environmental concerns. They are public health concerns, raising important questions about the ongoing toxification of our total environment.

If our culture is serious about meaningfully moving toward a sane and sustainable culture, this issue is at the crossroads of that transition. Choices that could potentially have devastating effects for people and the natural world need to be thoroughly investigated, studied, and analyzed. In 2009, as the earth's life support systems are being systematically dismantled by industry and agribusiness, we should not be treating our delicate eco-systems in an experimental fashion, in the name of recreation.

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photo: Andrina Hartley

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Time magazine called him an "Environmental Hero for the Planet" (2001) and *Smithsonian* magazine hailed him as one of "35 Who Made a Difference" (2005).

Dr. Plotkin will illustrate his lecture with a power point and he has agreed to sign copies of his book after the lecture.



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