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# We must take care with effluent

By JOHN ZAMBRANO

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In the Southwest, where users are depleting groundwater supplies, it is a given that municipalities should recharge treated wastewater to the aquifer to augment the water supply.

But is it really safe to do so? The assumption that it is safe needs examination in view of what we are learning about the presence of micro-contaminants that our conventional treatment processes don't remove completely.

When asked, our regional municipal officials will tell you that the treated wastewater meets all requirements imposed by the state. That statement is usually true, but does that mean our water supply is safe?

States, including Arizona, impose requirements on discharges to aquifers that, for the most part, are based on the same standards imposed on the water delivered to our homes. This seems sufficiently protective until you realize that we have drinking water standards for only about 90 contaminants, and wastewater contains many hundreds more.

The premise of our national Safe Drinking Water programs is that a water source should

be relatively clean and that you are guarding against a few common contaminants that may have entered the system. That premise has applied to our aquifer in the past, but as we recharge increasing amounts of treated wastewater, which contain hundreds of residual contaminants, it may no longer apply. While some dilution effect will occur, mixing is minimal in an aquifer and it is less of a factor as more wastewater comes in.

The hundreds of chemicals that are not completely removed are present in very small quantities, but some of these chemicals, individually and additively, potentially can cause adverse health effects on humans, even at very low concentrations. The most troublesome of these chemicals are those that disrupt our endocrine system by imitating our natural hormones, hence the term endocrine disruptors, or EDCs.

The dilemma we face is that while we know that many of these chemicals can be harmful, we don't have the toxicological information to know what concentrations are safe. And the first law of toxicology is "It is the dose that makes the poison."

When you consider how many chemicals

we use in our society and the very long time it takes to gather conclusive toxicological data, we will not have the needed information for many decades. The risk we face, therefore, is unknown and will be for some time.

So, what should we do? If we wait for the toxicological data and the subsequent state standards, our aquifer could be irreversibly contaminated at unsafe levels, and we may be harming our health. The easiest and least expensive actions for our municipalities to take is to institute an education program about what products we should not send down the drain and provide convenient programs for collection of many of these chemicals, particularly pharmaceutical and personal care products.

This will help, but not solve the problem entirely. We also should make sure that our conventional treatment processes operate as efficiently as possible.

It would be valuable for the municipalities to monitor the most prevalent of these chemicals to get an idea of their concentrations and the risk they might pose and begin to see if it's possible to reduce them.

This monitoring would be above what current rules require us

to do and, although relatively expensive, it would be prudent.

Should we stop recharging effluent? I don't believe we should because it would further exacerbate our depleting water supply.

Should we install advanced wastewater treatment processes? This could be expensive, particularly in these tough economic times. Furthermore, although we could reduce the concentrations of these contaminants and make the effluent safer, we still wouldn't know if it was safe enough.

It does, however, seem prudent to begin to investigate advanced treatment and consider additions as the economy improves. Eventually, state regulations may require advanced treatment for our wastewater and, if we wait too long, for our drinking water as well.

Our aquifer is vital to our health. We should be trying to do the most we can to protect it, and what we are doing now may not be enough.

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