



Frequently Asked Questions and Answers About Recycled Water Recharge

Q. Why is Inland Empire Utilities Agency (IEUA) recycling the water?

A. The demand for water in southern California exceeds the available supply. The State of California Water Plan and the Metropolitan Water District Integrated Water Resources Plan for southern California recommend the use of recycled water to alleviate future water shortages. For southern California, imported water and storm water supplies are not reliable especially during drought years. Recycled water provides a safe, cost effective and reliable supply of high quality water.

Q. Is water recycling a new technology?

A. Water recycling has been occurring in southern California for over 100 years. Much of the water recycled in San Bernardino and Riverside Counties has flowed into the Santa Ana River to replenish the downstream Orange County groundwater basin. With IEUA's groundwater recharge projects, much of this water will now replenish the Chino Basin groundwater basin for use in our area.

Q. How is recycled water produced from wastewater?

A. Prior to its use, recycled water undergoes four stages of purification to produce a high quality water that meets or exceeds standards making it safe to reuse. The different stages of purification at a water reclamation plant are just a speeded-up version of what is done in nature and can be as good as or even better than the natural process. In the first stage of purification, the wastewater entering a water reclamation plant flows into large tanks where the flow is slowed down, and the heavier materials in the wastewater settle to the bottom of the tanks and lighter materials, like plastic and grease, float to the top. The solid materials are removed for further treatment and disposal. The wastewater, which still contains dissolved and suspended organic material, goes on to the next stage of processing. In the second stage of purification, the wastewater from the first stage of the process flows into large tanks where microbes are added to consume the dissolved and suspended organic material. Air is bubbled through the tanks to supply the microbes with oxygen. After the microbes have done their job, the wastewater is sent to large tanks where the flow is slowed down and the microbial materials settle to the bottom of the tanks. The solid materials are removed for further treatment and disposal. The third stage of the purification process is to further clean the water using filters that contain granular

materials such as coal and sand. This process is similar to that used at plants that produce drinking water. The filters remove the very small particles remaining in the water after the second stage. After the water passes through the filters, it flows into tanks where chlorine is added to kill any harmful organisms, similar to the process used for swimming pools. At this point, the water is ready for a wide variety of reuse applications, including landscape irrigation, industrial manufacturing and groundwater replenishment. All IEUA water recycling plants meet or exceed all state and federal regulatory requirements for producing recycled water for groundwater recharge.

Q. What is groundwater recharge?

A. After leaving the water reclamation plant, the recycled water is delivered to earthen basins called spreading or recharge basins where the water can soak into the ground. When the recycled water enters the spreading basin it starts to soak into the soil, which consists of layers of sand, gravel, and clay. These layers allow the recycled water to undergo further physical, biological and chemical purification as the water filters through soil containing natural bacteria that utilize the available nutrients in the water. The water soaks deep into the ground and ultimately becomes part of the groundwater system.

Q. Do the underground layers of sand and gravel get dirtier and dirtier over time?

A. Organic material can accumulate in the soil as the biological process matures, but does not adversely affect this natural purification processes. Soil-aquifer treatment has been demonstrated to be sustainable over decades without reduced efficiency. In fact, IEUA has demonstrated that soil aquifer treatment works best with a continuous supply of recharge water.

Q. What are the water quality standards that must be met?

A. Recycled water must meet state and national standards for drinking water at the treatment plant, at the recharge basin, and in the groundwater. These standards must also comply with some additional water quality requirements specified in the California Department of Health Services draft groundwater recharge regulation.

Q. Who monitors the safety of recycled water?

A. IEUA collects data on the quality of the recycled water, the water as it moves down through the soil, and the underlying groundwater. This information is provided to the California State Department of Health Services and the Santa Ana Regional Water Quality Control Board as required by regulatory permits. IEUA conducts daily, weekly, quarterly, and annual sampling of recycled water based on a sampling schedule in the recharge permit and reports the results in quarterly and annual reports to the California Department of Health Services and Regional Water Quality Control Board.

Q. Who pays for monitoring?

A. IEUA pays for the sampling and testing.

Q. Is recycled water safe?

A. Yes, recycled water is safe. It must meet the State of California drinking water standards and the California Department of Health Services draft groundwater recharge regulations. There are numerous safeguards in place to make sure that a high quality product is provided for the intended use.

Q. How does recycled water compare with tap water?

A. Like tap water, recycled water must meet state and national drinking water standards. There are differences in mineral content and hardness. Tap water in our area comes from the Colorado River, the State Water Project and local groundwater. The mineral content and hardness of tap water depend on its source or blend of sources. Recycled water is significantly lower in mineral content and hardness than Colorado River water, but is generally higher than California State Water Project water. Groundwater mineral content and hardness varies throughout the Chino Basin but typically range between that of the State Water Project and Colorado River water.

Q. Will there be microorganisms in the groundwater supply because of the recharge project?

A. No. Harmful microorganisms such as viruses and bacteria are removed during the recycled water purification process. Added safety barriers are provided by the soil as the recycled water percolates into the groundwater and by underground storage of the recycled water blended with groundwater for at least six months before being pumped out by a municipal water supply well. A final barrier is provided when the groundwater that is pumped from a municipal well is disinfected prior to being supplied for drinking.

Q. Is cancer risk higher because of underground water recharge with recycled water?

A. The risk of cancer due to drinking groundwater water is not increased by the recharge of recycled water. Historic research of recharge of recycled water along the San Gabriel River since the early 1960s by the Rand Corporation and the National Academy of Sciences has documented no health impacts. Recycled water must meet the same State of California drinking water standards set based in part on cancer risk. Further, the California draft groundwater recharge regulations require that potential contaminants not currently included in drinking water standards be monitored and quantified, including testing for some pharmaceuticals and endocrine disrupting compounds.

Q. Are trace contaminants (organics) a concern for underground water that is recharged with recycled water?

A. Trace contaminants (organics) such as pesticides, synthetic and volatile organic compounds and dioxins that can be present in wastewater are effectively removed from recycled water during the reclamation purification process and as the recycled water moves through soil during recharge. IEUA laboratory results indicated those few compounds still detected after cleansing by the soil are present at very low levels, measured in parts per trillion. To put this into perspective, a part per trillion is equivalent to one cent in ten billion dollars.

Q. Are pharmaceutical compounds a concern for underground water recharge with recycled water?

A. Pharmaceutical compounds such as common birth control hormones have been tested for in IEUA's recycled water and have not been detected.

Q. Are endocrine disruptors a concern with underground water recharge with recycled water?

A. Endocrine disruptors are chemicals that interfere with the human hormone system, which controls a body's immunity, reproduction and growth. IEUA tests of its recycled water have shown that most of these compounds are not present or if present are at levels that are not of concern.

Q. Are there disinfection byproducts in the recycled water?

A. Disinfection byproducts are chemicals that are created when chlorine is added to water to kill microorganisms. Most disinfection byproducts are not present in IEUA's recycled water. Two groups of compounds that have been found in the recycled water as it leaves the reclamation plants are the Trihalomethanes and Haloacetic Acids. Testing of the recycled water under the recharge basins (and before it reaches groundwater) has shown these compounds are removed to levels well below drinking water standards.

Q. I can't get over the idea of bathing in and drinking sewage. I don't want to do it. What can you tell me that will make me feel better?

A. Together, the high level of chemical, physical, and biological purification at the reclamation plants, natural soil processes, sophisticated on-line and laboratory monitoring all ensure that the water meets all regulatory requirements, including drinking water standards. Additional safety measures such as blending with potable water as part of the recharge process, the natural soil treatment process, the 6-month underground hold times, and disinfection of groundwater prior to use all ensure the Chino Basin groundwater is safe for bathing and drinking.

Q. Are we speeding up the natural processes too much compared with the way Mother Nature does things and harming the environment and our health in ways that we don't even know about yet?

A. No. The natural treatment process employed in IEUA's modern reclamation plants do speed up the natural process, but it is considered more effective than the natural process. The different stages of purification at a water reclamation plant are as good as or even better than the natural process due to the level of sophisticated process control and water quality monitoring.

Q. With all the sources of water we have, why do we have to reuse the water that comes from our toilets?

A. The water we use from the Colorado River and State Water Project and local groundwater does not adequately supply the total demands for water in Chino Basin. Recycled water offers a reliable and safe supplement to imported and local sources.

Q. Experts say that all of our water needs can be met through conservation. Why then are we recycling this water?

A. Water recycling and recharge are parts of water conservation and IEUA's comprehensive water management portfolio. Recycled water is a reliable source that is needed to meet current and future water demands, especially in drought years.

Q. Why can't we just use this water for landscape irrigation?

A. IEUA currently has an extensive and growing program to provide recycled water for non-potable uses, including landscape irrigation, industrial processes, and agricultural irrigation. Even with these uses, other water demands exceed our available water supplies.

Q. Doesn't the water get dirtier and dirtier over time?

A. No. Water does not get dirtier over time. Every time water is recycled by IEUA, it is treated to a level that meets all regulatory requirements for drinking water standards. In nature there is no new water. Throughout history all water has been recycled through the natural processes of evaporation and rainfall. We are drinking the same water that was here with the dinosaurs. All water is "reused" or recycled.