

Facts About Epiphany Allegheny's Water Treatment Process

Epiphany Allegheny's personnel had the opportunity to engage in a number of conversations and answer questions from a number of people at the January 16 open house/public meeting regarding the company's plans for a wastewater treatment facility co-located at the Coudersport Area Municipal Authority's plant in Eulalia Township, Potter County. Epiphany believes it is important to share the answers to those questions with the community, and has provided detailed responses for the public to review.

1. EPIPHANY TECHNOLOGY QUESTIONS:

Q. How exactly does Epiphany treat the waste water?

A. Waste water will be treated using a two-step process that first removes all metals through chemical precipitation, followed by a distillation process that removes all of the salt in the water. The metals (about 2-3% of the total), including a minute trace of radiological material, will be transported to a permitted landfill, while the salt (15-20%) will meet quality standards for winter road treatment use. Clean, potable water (~80%) is the third byproduct of the treatment process.

Q. Is Epiphany's technology reliable?

A. Yes. Chemical precipitation technologies have been used reliably for decades, and the distillation process has been understood for centuries. In fact, distillation is the only process that is irrefutably proven to be 100% effective at removing salts from this type of waste water.

Q. Is there a chance that Epiphany's technology could fail and accidentally discharge untreated water?

A. No. The design and construction of Epiphany's facility includes multiple redundancies and fail-safe systems that are automatically employed in the highly unlikely event of any type of operational or equipment problem.

Q. How long has Epiphany been doing this?

A. Epiphany began intense research and development of high-efficiency, low-cost, seawater desalination technologies in 2009. Since that time, the company has raised the bar to meet the task of low-cost waste water desalination.

2. INDUSTRY QUESTIONS:

Q. Are there any other distillation plants in Pennsylvania or anywhere else that have the same treatment process and promise of "pure" water as their discharge?

A. Yes. There are many treatment plants that use distillation technology to treat various types of waste water, including three in Pennsylvania that are dedicated to the treatment of waste water from oil and gas production operations. Epiphany has combined the best technologies from those existing facilities to create the most robust and reliable waste water treatment process to date. Our facility will create a new standard for best practices in the industry.

Q. Where does this waste water come from and how much can be treated at Epiphany's facility?

A. Waste water transported to Epiphany's Coudersport facility will include flowback and produced water from existing wells drilled and operated in the immediate vicinity. The amount of water generated by those wells will vary, based on each well's specific stage of completion and production. The facility is designed and constructed to treat a maximum of 42,000 gallons of water per day.

Q. Will waste water be transported into our community from other places?

A. Epiphany's Coudersport facility is intended to treat water generated locally by oil and gas production operations, from wells between 10-20 miles from the plant. It is economically impractical to transport water from distances greater than that.

3. ONSITE STORAGE QUESTIONS:

Q. How much untreated waste water will Epiphany store on site?

A. The facility will have the capability of storing a maximum of 67,000 gallons of waste water, in a series of secure tanks that are elevated above the flood plain and outfitted with a redundant secondary containment system.

Q. What kinds of waste solids will Epiphany store on site?

A. Small amounts of heavy metals and traces of radiological material removed during the chemical precipitation process will be stored in secure containers until they are prepared and shipped for disposal at a permitted landfill. Clean salt that is removed in the distillation process will also be stored in secure containers at the facility while it is awaiting transport to customers for use as road salt.

Q. Is there any possibility of contaminants being accidentally released to the river or the environment, or in the event of a flood or heavy rain?

A. Epiphany's facility has fail-safe redundancies built into its design and construction, including elevating all equipment above the level of a 100-year flood event, as well as secondary containment systems designed to prevent any water from ever unintentionally flowing in or out of the facility. The treatment system also includes real-time monitors that will detect any disruption to either the precipitation or the distillation processes that automatically prevent any potential impact to the environment and immediately alert our on-site technicians.

4. AIR QUALITY QUESTIONS:

Q. What will Epiphany's facility emit to the air, if anything?

A. Epiphany's closed-loop treatment process will not produce any emissions to the air. The only emission created by Epiphany's facility will be produced by its natural-gas fired boiler system, which is the equivalent of emissions produced by about 10 household boilers.

Q. Will Epiphany's facility be misting frack wastewater "vapor" as part of its treatment system?

A. No. Despite some inaccurate reports, there is no form of "mist-evaporation process" in Epiphany Allegheny's treatment process.

Q. Has there been baseline air sampling at the facility site or near the Coudersport Elementary School?

A. Based on the fact that no emissions will be produced from Epiphany's treatment process, there is no need to collect baseline air monitoring data either near the facility or the elementary school. Regardless, the company will collect that baseline information.

5. WATER QUALITY QUESTIONS:

Q. What is in the untreated waste water?

A. Oil and gas waste water typically contains about 20 percent salt and approximately 2-3 percent metals. Within that trace amount of metal content is an even smaller amount of naturally occurring radioactive material, less than one-half of one percent. All of these constituents are removed during the treatment processes.

Q. How clean is Epiphany's discharge water after it is treated?

A. The discharge water from Epiphany's facility not only exceeds the minimum treatment standards for discharge, but it also meets drinking water standards. It is so clean that we regularly drink the water produced from our facilities when we are working at those sites. Epiphany believes strongly that it has a moral responsibility to produce water that meets a higher standard for treatment, and this facility accomplishes that goal.

Q. What will happen to the water after it is treated by Epiphany?

A. Water will either be recycled to support additional oil and gas completion operations or conveyed to CAMA's treatment facility, where it will improve the quality of the water being treated prior to its discharge under CAMA's NPDES permit.

Q. Will Epiphany's discharge water pose a risk to the river or the environment?

A. There will be no potential risk to the river or the environment from the discharge of treated water from Epiphany's facility, and redundant safeguards are built into the facility's operations to prevent any inadvertent release of water that has not undergone treatment.

6. NORM and TENORM QUESTIONS:

Q. Does untreated waste water contain NORM or TENORM?

A. Epiphany understands community's concern about radiation. The scientific facts below will help put things into perspective.

FACT: Radium exists naturally in our environment, so all water in the area contains measurable levels of naturally occurring radium. It is true that untreated waste water from oil and gas operations often contains radium at levels that exceed drinking water standards, but the waste water is not drinking water. That is exactly why Epiphany is treating it.

FACT: Even with radium levels in waste water, it does not pose an immediate exposure risk to people or the environment. Truck drivers who have handled and transported this same water every day for their whole career typically receive less radiation exposure from handling the water than they do from annual medical procedures.

FACT: The geology in this region does not contain any appreciable amounts of uranium or thorium, so those elements are not a concern in the waste water treated by Epiphany. If those elements were present, Epiphany's two-step purification process would easily remove them.

FACT: Epiphany requires that waste water samples from every well pad be submitted for third-party laboratory testing prior to Epiphany accepting water from that location.

FACT: Every truckload of waste water received at Epiphany's facility will be scanned for radiological emissions prior to unloading. That data will be logged and certified by the driver and our on-site technician.

Q. Will Epiphany's discharge water contain NORM or TENORM?

A. No. There are several water treatment methods that easily and reliably remove radium and other radiological materials from water. Epiphany's process employs two of those methods, back-to-back. Either one of those methods alone would be enough to reduce the radiological content in the output water to non-detectable levels, which means our output water contains far lower levels of radioactive compounds than the naturally occurring water from the springs, lakes and streams in the area.

Q. Where do the NORM and TENORM end up?

A. The heavy metals, including NORM and TENORM materials, are contained in the solids that are removed in the first step of our process. Those waste solids are securely stored and transported for disposal at permitted landfills. Total levels of radiological material in each landfill shipment will be scanned twice, first at Epiphany's facility and a second time prior to being accepted for disposal at the landfill.

Q. Has there been baseline sampling for TENORM upstream, downstream and adjacent to CAMA's discharge point?

A. Because Epiphany's treatment process results in the release of water that is far cleaner than state and federal standards, baseline sampling is unnecessary. However, as an added assurance, the company will conduct that baseline sampling.

7. COMMUNITY BENEFITS:

Q. How will Epiphany's facility benefit the citizens of Coudersport?

A. Epiphany's facility is expected to provide approximately \$80,000 per year to CAMA in the form of land lease and payments to discharge water to CAMA's system. The facility will also reduce total truck traffic and emissions associated with that truck traffic, estimated to be approximately 700 tons of carbon emissions annually, along with similar reductions in particulate matter, sulfur dioxide and nitrogen oxides.

Q. Will Epiphany's facility generate local jobs?

A. Epiphany's facility will employ local full-time technicians, as well as interim construction jobs while we prepare the site for operations.

EPIPHANY
ENVIRONMENTAL