

Does the EPA consider condensate to be graywater?

The views expressed are those of the individual author and may not necessarily reflect the views and policies of the United States Environmental Protection Agency (EPA).

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From: Steve Williams <therainsaver@me.com>
To: Dennis Lye/CI/USEPA/US@EPA; Bob Boulware <bboulware@design-aire.com>, John Hammerstrom <john.hammerstrom@arcsa.org>

Subject: Condensate Is Graywater?

**Hi Dennis and Bob,
A discussion group stated that EPA considers condensate to be graywater.
True or false?**

lye.dennis@epamail.epa.gov wrote:

*Hi Steve,
Great question. There may be people (even within EPA) that do not have a good understanding of what condensate is.*

Short answer – No.

*In the future, EPA will not consider condensate as a type of graywater.
See the “Additional Information” below if you want the long version of the answer.*

From: "bboulware@design-aire.com" <bboulware@design-aire.com>
Dennis,

This is an important issue for me to get clear in my mind since I am involved with writing the codes on this very issue. I understood your opinion to be that ac condensate was a concentrator of airborne pathogens, Legionella in particular....which is consistent with my experience with air quality issues.

You said that EPA may not have an opinion. Is that the same as there is not problem? There are systems being considered Hybrid systems where condensate is being run into the cistern. My expressed view, based on my understanding of what we talked earlier about, is that combining the two reverts the rainwater to the lowest common denominator which would require that the Hybrid water be treated as grey water: sanitized if brought into the building, and used for sub surface irrigation outside the

building without sanitizing.

How close to being on track am I here?? I'd appreciate your thoughts.

E. W. Bob Boulware, P.E., M.B.A., President

Hi Bob,

You are right on track. Think of it in this regard. When we look at the microbiology (there are chemical problems associated with condensates also) of a condensate coming off of some type of cooling coil, it is very similar to the microbiology seen in your pet fish aquarium. It has a very active community of microorganisms that are not found in naturally occurring water. I would consider air conditioner condensate as even worse than the first flush of rainwater as far as microorganisms are concerned. I would not want to add fish aquarium water to my drinking water and then consume it without some type of treatment (but maybe that is only because I know what is in both).

Condensates are a fertile ground for bacteria such as Legionella and can actually act as an amplifying device for this organism. There are currently no federal guidelines for Legionella here in the United States. There are guidelines in Europe and we think that there should be guidelines here also but there are the very real consequences of cost involved to institutions when regulation enters the picture.

You ask if an absence of regulations can be equated with "there being no problem". The answer, again, is a matter of priority. When we push for regulations on any newly emerging pathogen, the first question we get is "What is the body count?" Legionella causes only sporadic outbreaks that are limited to only a few individuals at any one time (something we call community-derived infection). It has not caused enough concern to this point to require legislation. However, if future use of condensate broadens exposure to communities not currently exposed, the body count will probably go up and at some point we will regulate the occurrence of Legionella and other microorganisms like this.

Your assumption that a system receiving condensate should be considered polluted is a good and sound way to approach the development of codes that will actually protect against these types of problems that are not currently regulated.

We cannot force someone to treat water containing condensate but we could certainly point out the increased risks of infection. It will be up to the EPA to document these types of situations.

I would use the aquarium fish tank water analogy to try to explain to someone why condensate water is something that needs to be treated before consumption.

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Additional Information

Where do alternative water sources such as “air conditioner condensate” fit into the already accepted recycled water discussions?

There are many types of water sources. There are in fact too many for a governmental agency to try to define in each specific case. There will probably be three general types of water as far as the USEPA is concerned - Surface water, Ground water, and Reclaimed water. Of course, USEPA does not currently regulate any of the reclaimed water sources although this will probably occur in the future. Standards and regulations for reclaimed water are currently promulgated by each state legislature and can be different from state to state

We refer you to the following EPA document and website if you would like to read more details about USEPA determinations concerning reclaimed (recycled) water reuse.

<http://www.ehproject.org/PDF/ehkm/water-reuse2004.pdf>

EPA/625/R-04/108 September 2004, **Guidelines for Water Reuse**

Both Graywater and condensate will be a type of reclaimed water (water not occurring as part of a natural cycle).

Graywater is wastewater drained from lavatories, showers, bathtubs, washing machines, and sinks not used for the disposal of hazardous or toxic ingredients or waste from food preparation. Blackwater is usually wastewater from the kitchen sink and toilet. Kitchen sink waste is considered to be blackwater, due to its high concentration of solids.

Arizona has a rather standard definition of graywater: R18-9-701(4) “Gray water” means wastewater collected separately from a sewage flow that originates from a clothes washer, bathtub, shower, and sink, but does not include wastewater from a kitchen sink, dishwasher, or toilet.” This is similar to most definitions determined by state laws.

There are many different types of sources that will yield a “condensate”. A general definition of the term “condensate” is given below.

Webster's Revised Unabridged Dictionary (1913) (*v. t.*) To condense. (*v. t.*) Made dense; condensed.

As far as the USEPA is concerned, there are vast differences between sources identified as “graywater” and sources identified as “condensates”. Both will be a type of reclaimed water but each will require very different guidelines. For this reason, informed individuals within USEPA will not define condensates as a type of graywater.

Here are just a few examples of the diversity within generated “condensate” waters.

“The liquid phase produced by the condensation of steam or any other gas”

“Moisture in the air that is pulled through a compost pile”

“Water that has been produced by the cooling of steam in a condenser”

“Liquid fuel obtained by burning gas or vapor produced from oil and gas wells”

Technically, the water recycled from cooler coils or air conditioner coils is sometimes considered as a type of noncontact cooling water and can also be defined as a type of nonprocess wastewater.

Condensates are being produced in larger amounts in commercial and industrial situations. The USEPA is currently refining definitions of exactly what are the parameters and compositions of a variety of different condensates that cover a wide spectrum of sources. Stay tuned.

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