

Emails Week of July 21, 2008

Dear Honorable Mayor and Council Members,

Your attention is invited to, "Overview of graywater management: health considerations, World Health Organization, 2006".

For "Bathing and shower", faecal coliform in greywater was 6000 cfu 100 mL; for washing machine (with children) was 26000-845000 cfu 100 mL; for washing machine (without children) was 70-29000 cfu mL; for shower and hand wash was 1500-35000 cfu 100 mL; shower and bath was 10-5000 cfu 100 mL. The number of faecal coliforms cited are well above the accepted safety level. These data demonstrate that greywater could pose a potential health risk to people coming into contact with it (Ref: Page 12) although there are no recorded incidents of serious effects on human health from the reuse of greywater (Page 21).

Accordingly, greywater, from the sources cited on Page 12, is a Reclaimed Class A+ or Class A requiring warning signage at each bibb and front yard of each residence in accordance with the provisions of Arizona Administrative Codes, Title 18, Ch. 9, Page 96, Sept. 30, 2005.

From among the risk minimizations listed, the following are significant to the proposed graywater use in Tucson:

- Graywater should not be used in a manner that may result in direct contact with vegetables or other edible plants. It may be used to irrigate fruit plants where the fruit does not make contact with graywater.

- The land application system must be signposted to advise that graywater is being reused and that contact with the water must be avoided.

- Greywater should not be stored, unless it has been treated and disinfected.

Among the effects of greywater on human health are:

- by accidental ingestion of contaminated water during recreational activities.

- by inhalation of aerosoles or dust due to irrigation with greywater.

- by vectoring from infected individuals.

The presence of cations (Ref: Table 7, Page 20) usually enhances the retention of viruses by soil (sic, Tucson Water's potable water TDS has high cation counts of calcium and magnesium).

Also applicable:

- System flow rates on coarse sandy soil or gravel should be designed carefully to avoid greywater leaching into ground water or surface water (sic, what is put on the residence lot, stays on the lot).

- Manufacturers of mechanical greywater reuse systems must adequately demonstrate to the satisfaction of the Dept. of Health that the system can be operated effectively in the long term without blockage (sic, what is the annual statistical failure rate? Washing machine lint and TDS on the deposition gravel must be evaluated).

- GREYWATER SHOULD BE USED IN QUANTITIES THAT CAN BE TAKEN UP BY THE PLANTS AND SOIL. EXCESS GREYWATER WILL FLOW TO THE GROUNDWATER AND MAY CAUSE CONTAMINATION (WHICH TUCSON GOVERNMENTAL ENTITY PROVIDES THIS PROOF?)

- Maintain a horizontal separation distance of at least 2 meters, ~6 ft., from any point of a pedestrian path, walking, or recreational area (Page 42).

- For the greywater irrigation of ornamental fruit trees and fodder crops, the following tests and frequencies of testing for greywater reuse are (Table 15, Page 43):

BOD(5) mg/L	<=240	monthly
-------------	-------	---------

TDS mg/L	<=140	monthly
----------	-------	---------

Faecal Coliform cfu 100 mL	<=1000	2/monthly
----------------------------	--------	-----------

Conclusion (Page 44)

@. The most commonly used indicators of faecal pollution in greywater are coliforms and enterococci. Several studies have reported high numbers of these organisms which indicate substantial faecal contamination of the gray water

The WHO Overview of greywater management lists 55 references including:USEPA,State of Colorado,Azdeq(Title 18,Ch.9),Alabama State Board of Health,State of Florida Dept. of Health,Hawaiiin Dept. of Health,Idaho Div of Environmental Quality,Michigag Dept. of Public Health,Nevada Adopted Regulation R 129-98, and Environmental Development Service,Richmond Valley.

CNN recently published a list of the 100 best places to live in the US. Tucson was absent from yhe list but can be found in the best places to live in the West where Tucson is ranked 95 behind Phoenix and among others(Ref:money.cnn.com/best/bplive/).

Respectfully,Clyde H Stagner, aTucson citizen

To whom it may concern,

Hello. I am a student at Allegheny College in Meadville, PA. I am currently conducting a marketing study that deals with sewage pipe and treatment plant capacity. I was wondering if you have access to information that deals with how many millions of gallons of day Tucson and Pima pumps through its sewage facilities in total. Also, if you know how many 6-12 inch 14-17 inch 18-36 inch and 36 + inch sewage pipe may exist within your town. If you may know how to get a hold of this information or have advice about where to find this for other cities, I would much appreciate it! thank you

Sincerely,
Garrett G. Glausser
Allegheny College
