

Composting Toilet and Graywater Reuse Summit

Public Health Considerations

May 28, 2009

The California Department of Public Health (CDPH) supports maximizing the opportunities for water reuse.

Our focus is on protecting public health from a statewide perspective, especially as it relates to protecting our drinking water (CDPH drinking water oversight responsibility).

From a broader perspective, CDPH also has a responsibility to ensure that any proposed practices protect public health.



Oversight Limitations

- The technical merits of the specific types of design or proprietary units for compost toilets lie outside the oversight responsibility and authorized scope of CDPH.
- The technical merits of the specific types of design or proprietary units for graywater subsurface drip systems lie outside the oversight responsibility and authorized scope of CDPH.

Regulations – Manage Risk

- protect public health
- need to be technically sound
- based on assumptions that can be supported by science
- provide at least a benchmark or baseline for all systems
- allow options for treatment systems warranted by local conditions/concerns
- be politically viable
- be acceptable to stakeholders and realistic
- able to be implemented

In Addition

Regulation should:

- help protect the consumer (provide effective, reliable & robust products)
- be cost effective – cost/benefit
- encourage or allow the use of appropriate technology
- consider unintended consequences

What Establishes a Health Risk



That an infective dose of a pathogen reaches a place in the environment with potential for exposure to a host;



That this infective dose reaches a human host;



That this host becomes infected; and

a) That this infection causes disease or further transmission.

a), b) and c) constitute the **potential risk** and d) the **actual risk** to public health. If d) does not occur, the risks to public health remain potential only.

Public Health Concerns

Compost Toilets

- Compost toilets can become a health hazard if they are not designed or maintained appropriately.
- The level of risk to health will depend on the health status of the users, the extent of exposure with the humus or compost produced and the form in which the end-products are re-used.
- The final use of the compost is also an issue.
- Not all pathogens are destroyed in the composting process, appropriate handling and disposal of the compost is essential.

Butte County Guidance

- Composting toilets do not eliminate the need to treat and disperse sink, laundry, bathing, and other non-toilet wastes (Graywater).
- Many composting toilets produce small quantities of their own liquid wastes

Butte PH Suggested Requirements

- Careful selection of the appropriate product, including third-party certification by NSF or equivalent;
- Inspection of the installation by the appropriate county department;
- Approved septic system for graywater and assurance that the parcel can support a larger septic system to handle the parcel's full wastewater load, should the composting unit fail or should future users opt for a conventional watercarried toilet;
- Deed restriction to inform future property owners of their responsibility for maintenance of the system and health risks associated with waste handling;
- End product handling and disposal requirements;
- User education and certification; and
- Operating Permit



Public Health Concerns

Graywater

- Ensure protection of the public from exposure to water that may have some bacteriologic or other contamination
- Expanded graywater use should be done with sufficient controls to protect public health
- In particular, there are and should continue to be provisions to prevent possible backflow from a graywater system into a domestic drinking water supply
- There may be additional requirements needed to prevent public exposure to graywater from direct contact or from consumption

Issues

- Graywater can potentially contain toxic chemicals and pathogens such as parasites, infectious bacteria and viruses and exposure to it can pose a risk to human health.
- A review of the literature reveals that graywater is consistently contaminated with fecal material
 - Enteric pathogens of concern, including *Salmonella* spp., and *Cryptosporidium*, although in low concentrations
 - In large part dependent on makeup and habits of occupants
 - Recent findings of crop uptake of pathogens from contaminated irrigation water.

Inside Reuse

- Title 17: Backflow Protection
 - Water user's onsite activities pose a health risk to the water supply if access is provided.
 - Many involve increase threat of cross-connections (dual plumbed, graywater, recycled water systems).
- Title 22 : Reuse Quality Standards
 - Recycled water used for the following shall be disinfected tertiary recycled water:
 - (1) Flushing toilets and urinals,

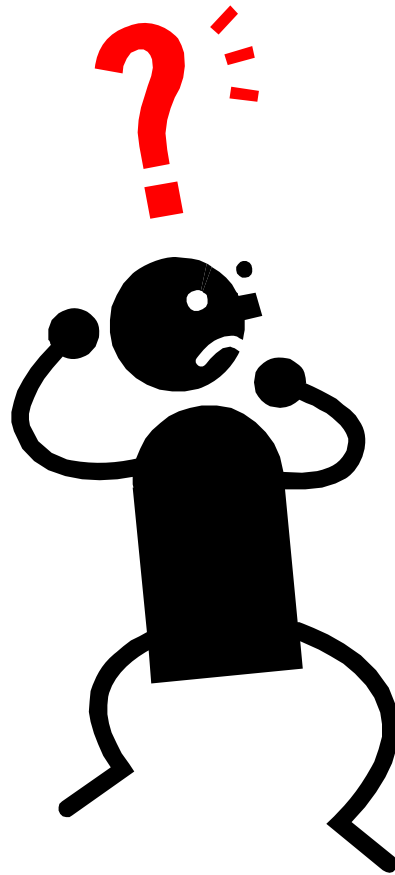
Outside Reuse

- The level of risk to health will depend on the health status of the occupants, the extent of exposure and how the end-products are re-used
- In respect to microbiological characteristics, the average concentrations of indicator bacteria in graywater are similar to those of secondary treated wastewater effluent.
- Studies suggest that the chemical and physical quality of untreated household graywater lies somewhere between raw wastewater and secondary effluent

In summary our goal is to:

- protect public health
- protect the environment
- provide safe & effective water reuse
- provide the consumer with alternatives that are robust, reliable and cost effective

QUESTIONS



References

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