2/12/2019

2018 Flooding Notes

Considerations submitted by KDHE District Environmental Administrators (NCDO and NWDO) for discussion at the 2018 LEPP Annual Sanitarian Meetings

Riley County:

One of the items at the Manhattan flooding that came up were there were a few business/landlords that the city actually responded to for a lack of action to address the water damage. Check with Riley County sanitarian about how he interacted with their zoning group to address this.

Big topics for homeowners are how to do the cleanup, what can be saved, water, and how to avoid mold issues not necessarily anything that is covered by regulations but having the information helps them address concerns.

Graham County:

15 houses and buildings were flooded. The structures consisted of a mobile home park, single family residences, and a couple of commercial buildings and offices. **Only one home owner has flood insurance**.

Under KDHE guidance and approval, debris will be segregated into the following categories; household hazardous waste, appliances, electronics, municipal waste, and other debris.

- The HHW will be staged in the current HHW facility. If it becomes full, the waste will then be stored in an enclosed trailer. BWM may then have funding available for the pickup and disposal of the HHW. I recommended county personnel remove the HHW from the flood area two times/day. **County personnel provided brochures to the residents on what waste and how it should be segregated**.
- The appliances will be evacuated of Freon by a local metal recycler who will then pickup them up for recycling. The appliances will be staged in the trailer park in the impacted area.
- Electronic waste will be staged at the landfill. KDHE is currently looking for a recycler to handle the electronics. If one can't be found, the e-waste will be disposed in the regular trash and taken to Finney Co. Sub D Landfill.
- All other waste has been approved by KDHE to be disposed at the C&D landfill. **Specific instruction was left with the landfill operator to carefully screen all waste coming in for any contaminants. A log of flood debris/waste is being kept by the operator.** Graham Co. has waived the disposal fees for flood victims. A small number of mobile homes and cabins are considered a total loss and will be disposed at the C&D landfill.
- All tree and brush will be taken to the permitted burn site at the landfill. Any temporary burn sites, if needed, will need approval from NWDO.

An area seed company had a storage shed which contained 1,000 bags of seed corn and sorghum treated with various pesticides. Approximately 900 of the 50lb. bags are damaged and must be disposed. In consultation with BWM, the seed can be taken to the Thomas County Compost Facility near Colby. Graham County has agreed to fund the transportation and fees for composting.

There is a very large amount of sand and silt that was deposited in the area by flood waters. In some places, the sand/silt was over 3' thick. The flooded area is not within the limits of Hill City, but I suggested contacting the city administrator and requesting assistance from them. I suggested they could provide trucks and equipment for debris and removal of sand/silt.

It was recommended to the commissioners that their County Health Nurse become heavily involved to protect the health and safety of the residents during cleanup. Mold will start growing almost immediately and can threaten public health. Health staff gave tetanus shots to anyone in the area who wanted one. It was recommended the county distribute dust masks (preferably N95), rubber gloves, and possible eye protection. They have gotten a supply of surgical masks that will be distributed. Another suggestion was to have bottled water available since none of the residents can use their water wells.

Floodwater contaminated by microbes may contain bacteria, viruses, protozoa, and helminths (3). Exposure to these pathogens can cause illnesses ranging from mild gastritis to serious diseases such as dysentery, infectious hepatitis, and severe gastroenteritis (4). The concentration of microbes in flood water depends on the sources and volume. **Typically, it takes 2–3 months for enteric bacteria to significantly reduce in soil**, with certain exceptions (6). Environmental factors including temperature, soil desiccation, pH, soil characteristics, and sunlight influence microbial survival and persistence.

Public health education efforts should include personal hygiene precautions and guidance. Education efforts should emphasize proper handwashing and **adequate handwashing and drying supplies and equipment in public restrooms and at temporary handwashing facilities should be provided**.

Intended use of outdoor areas (e.g., grass-covered high school soccer field versus daycare outdoor play area), with **special consideration for areas where young children are likely to play**, should be determined and considered. For example, sand in sandboxes and soil, mulch, and wood chips around outdoor playground equipment may need to be removed. All outdoor items with cleanable surfaces that were in contact with flood water should be adequately cleaned before they are used.

Small areas of gross contamination (i.e., sewage with visible solid material) should be cleaned, and treatment with hydrated lime may be considered. Hydrated lime can be applied to increase pH to a level that kills microbes. EPA requires that the pH of sewage sludge treated for land application be held at 12 for a minimum of 2 hours to kill microbes, and be held at a minimum of 11.5 for 22 additional hours to reduce vector attraction. **However, these pH level requirements pertain to treating sewage sludge and not soil. Lime effectiveness for treating microbial-contaminated soils was not proven during literature review. Wide-scale application of lime could affect human health and the environment, which could outweigh potential risks posed by a flood event.**

Other remedial and control options may be considered. Exposure to potential pathogens in soil may be controlled by **depositing new soil on top of the affected soil and compacting, planting new grass, watering to flush organisms out of the upper soil layers, covering the affected ground with asphalt, brick, stone, cement, or other solid paving material**, and applying dust-suppressant products where air dispersion is a concern.