

MICROBIAL CONTAMINANTS IN YOUR DRINKING WATER: E. COLI AND TOTAL COLIFORM

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OVERVIEW

BACKGROUND ON CONTAMINANT ENTRY POINTS

- WHAT IS E. COLI AND TOTAL COLIFORM? WHY DOES THIS MATTER?
 - HOW DO THEY GET INTO THE WATER DISTRIBUTION SYSTEM?
- ### SITUATIONAL AWARENESS
- WHO IS RESPONSIBLE FOR PROTECTING AGAINST MICROBIOLOGICAL CONTAMINANTS?
 - WHAT CAN YOU DO TO PREVENT E. COLI AND TOTAL COLIFORM?

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TOTAL COLIFORM

- TOTAL COLIFORMS ARE A GROUP OF RELATED BACTERIA THAT ARE (WITH FEW EXCEPTIONS) NOT HARMFUL TO HUMANS. A VARIETY OF BACTERIA, PARASITES, AND VIRUSES, KNOWN AS PATHOGENS, CAN POTENTIALLY CAUSE HEALTH PROBLEMS IF HUMANS INGEST THEM.
- EPA CONSIDERS TOTAL COLIFORMS A USEFUL **INDICATOR OF OTHER PATHOGENS** FOR DRINKING WATER. TOTAL COLIFORMS ARE USED TO DETERMINE THE ADEQUACY OF WATER TREATMENT AND THE INTEGRITY OF THE DISTRIBUTION SYSTEM.

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E. COLI

- E. COLI ARE BACTERIA WHOSE PRESENCE INDICATES THAT THE WATER MAY BE CONTAMINATED WITH HUMAN OR ANIMAL WASTES.
- HUMAN PATHOGENS IN THESE WASTES CAN CAUSE SHORT-TERM EFFECTS, SUCH AS DIARRHEA, CRAMPS, NAUSEA, HEADACHES, OR OTHER SYMPTOMS.
- THEY MAY POSE A GREATER HEALTH RISK FOR INFANTS, YOUNG CHILDREN, THE ELDERLY, AND PEOPLE WITH SEVERELY COMPROMISED IMMUNE SYSTEMS.

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CONTAMINANTS

THE SAFE **DRINKING WATER** ACT DEFINES THE TERM "**CONTAMINANT**" AS MEANING ANY PHYSICAL, CHEMICAL, BIOLOGICAL, OR RADIOLOGICAL SUBSTANCE OR MATTER IN **WATER**

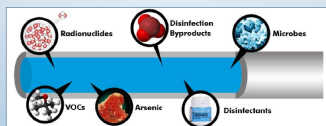
TO ASSESS, WE LOOK AT THE HEALTH EFFECTS:

ACUTE

- AN IMMEDIATE (I.E. WITHIN HOURS OR DAYS) EFFECT THAT MAY RESULT FROM EXPOSURE TO CERTAIN DRINKING WATER CONTAMINANTS
- MONITORING APPLIES TO ALL PUBLIC WATER SYSTEMS

CHRONIC

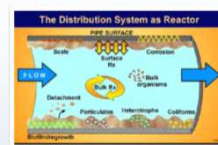
- THE POSSIBLE RESULT OF EXPOSURE OVER MANY YEARS TO A DRINKING WATER CONTAMINANT AT LEVELS ABOVE ITS MAXIMUM CONTAMINANT LEVEL (MCL)



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HOW DO CONTAMINANTS GET INTO THE WATER SYSTEM?

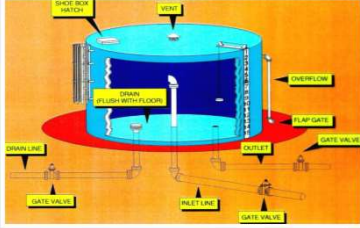
- SOURCE
- PIPES
- BACKFLOW/CROSS CONTAMINATION / PHYSICAL OPENING



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MOST VULNERABLE PART OF A WATER SYSTEM: TANKS


- ZERO PRESSURE AT AIR/WATER INTERFACE
- DESIGNED TO BE OPEN TO ATMOSPHERE THROUGH MULTIPLE MEANS
 - LARGE AIR VOLUME EXCHANGE DURING DRAW DOWN
- MAY BE A REPOSITORY FOR SEDIMENT



The diagram illustrates a cross-section of a water storage tank. Key components labeled include: SHUT DOWN PARTIAL, VENT, OVERFLOW, PUMP GATE, GATE VALVE, EXHAUST, INLET LINE, GATE VALVE, SPILL LINE, and SPILL LINE FLOOR. The tank is shown with a large air volume at the top, indicating the potential for air exchange during draw down.

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MOST VULNERABLE PART OF A WATER SYSTEM: TANKS



The photographs show different parts of a water storage tank. The top left photo shows a vent pipe. The top right photo shows an overflow pipe. The bottom photo shows a large circular opening, likely a manhole or access point.

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MOST VULNERABLE PART OF A WATER SYSTEM: TANKS



The photographs show the interior and exterior of a water storage tank. The left photo shows the interior of the tank, which appears to be empty and somewhat dirty. The right photo shows the exterior of the tank, which is a large, rectangular concrete structure.

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MOST VULNERABLE PART OF A WATER SYSTEM: TANKS



The photograph shows a person wearing a safety harness and a hard hat, working on a water storage tank. The person is standing on a platform and appears to be inspecting or working on the tank's structure.

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DON'T FORGET! YOU NEED FALL PROTECTION TRAINING



The photograph shows a person wearing a safety harness and a hard hat, working on a water storage tank. The person is standing on a platform and appears to be inspecting or working on the tank's structure.

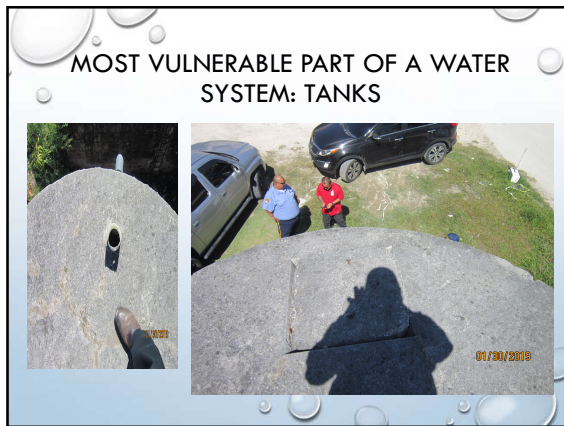
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WHAT IS HAPPENING ON PRIVATE PROPERTIES IN CNMI?

QUESTION

ARE STORAGE TANK MICROBIAL VULNERABILITIES
LESS OR GREATER
ON
PRIVATE PROPERTIES?

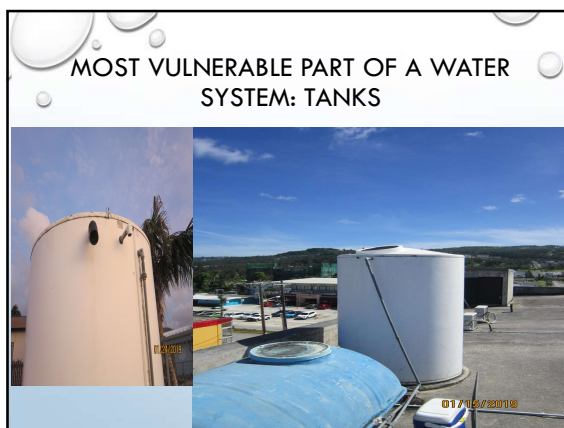
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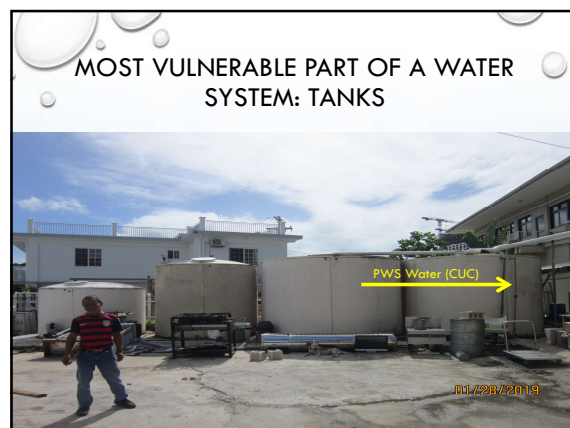
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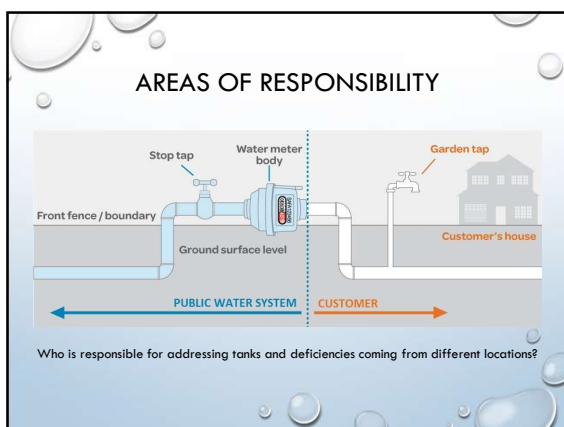
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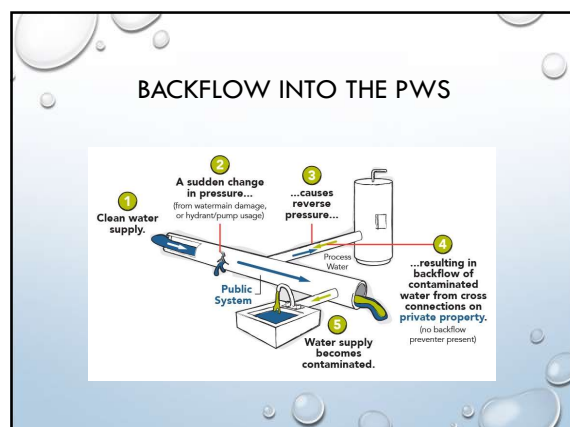
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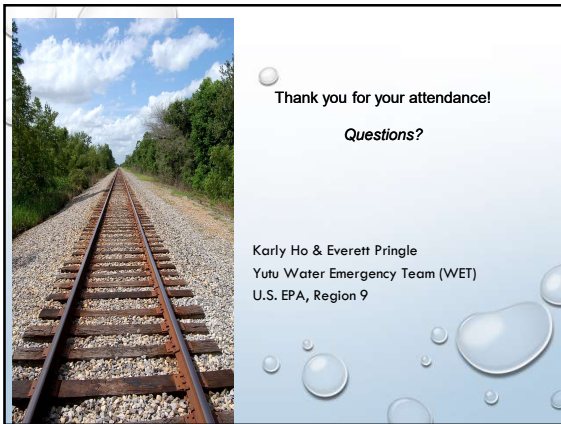
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