Water Purification

HM3 Stephanie Solache, 8th Engineer Support Battalion, Destroyer Squadron 40, Puerto Barrios, Guatemala, 2014.

OVERVIEW

- Water Sources and Characteristics
- Factors Affecting Sources of Water
- Procedures for Water Purification
- Water Testing

Learning Objectives

Please read your

Terminal and Enabling

Learning Objectives

Background

- Safe water is essential
- Insufficient quantity or quality can affect operational readiness
- All personnel must be familiar proper water discipline

WATER SOURCES AND CHARACTERISTICS

Water may be obtained from various sources in the field including the following:

Salt Water

- Sources:
  - Ocean, sea
- Characteristics
  - Less contaminated
  - Unlimited supply
  - Best source of water if a ROWPU is available

Ground Water

- Sources
  - Wells & Springs
- Characteristics
  - Best source of water during an NBC attack
  - Less chemical & biological pollution
  - Quantity is hard to determine

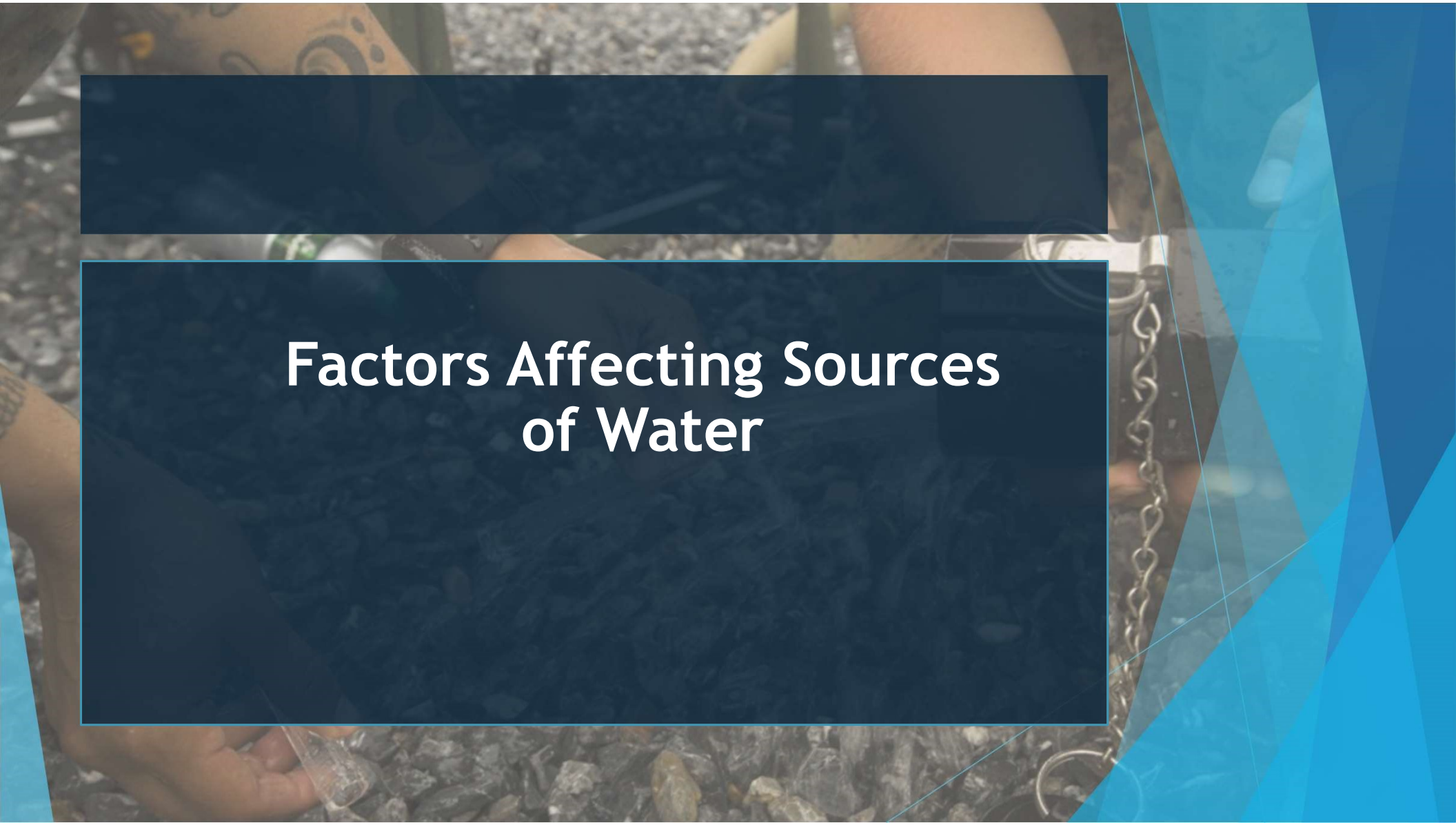
Surface Water

- Sources
  - Rivers, lakes, ponds, streams
- Characteristics
  - Larger sources less contaminated
  - Moving water is preferable
  - Easiest to procure for individual use
  - Readily accessible

3/5 Kilo Company patrols the Helmand River. Sangin, Afghanistan. 2011.

Rain Water

- Not a reliable source
- May not provide an adequate supply



Factors Affecting Sources of Water

Quantity

- Source should provide adequate

  supply for all troops

- Must last for the duration of operations

Quality

- Free of contamination from sewage, toxic elements and NBC agents
- Source protected from runoff from latrines, showers, motor pools, etc.
- Should be clear/colorless

Quality

- Water should not be objectionable due to turbidity, color, taste or odors
- Remove turbidity to reduce contamination if possible
  - Suspended particles often contain organisms that cause disease
  - Particles decrease effectiveness of chlorine

Quality

- Temperature
  - Warm water is not a palatable
  - Consumption rate decreases as water gets warmer
  - Cool water retains chlorine longer

Accessibility

- Must be easily ACCESSIBLE to water purification and transport equipment

PROCEDURES FOR INDIVIDUAL WATER PURIFICATION

Types of Containers

- Canteen
  - Individual use
  - 1 qt
- Jerry Can
  - 5 gallon container
  - Must be labeled

    "POTABLE WATER ONLY"

Types of Containers

- Lyster Bag
  - 36 gallon capacity
  - Used for hand washing stations
  - Rarely used in current operations

Types of Containers

- Water Bull
  - 400 gallon capacity
  - Mobile potable water
  - Easily accessible

IODINE TABLETS

- NO LONGER ISSUED

- However, if you have them and need to use them:
- Inspect tablets for signs of deterioration

- Should be solid and steel gray in color

- Tablets that are yellow or brown, that stick together or crumble easily are no longer effective

IODINE TABLETS

- Purifying water in canteens:
  - Fill canteen with cleanest water possible
  - Add two iodine tablets to 1 quart canteen
  - If using tincture of iodine, five drops are equal to one tablet
  - Replace cap and shake to dissolve tablet
  - Wait 5 min, loosen cap and allow leakage around the threads
  - Tighten cap and wait an additional 25 min before drinking

IODINE TABLETS

- Purifying water in hydration systems
  - Fill hydration system with cleanest water possible
  - Use four tablets for 70-72 oz system
  - Use six for 100-102 oz system
  - Allow 30 min total contact time

CHLORINE BLEACH

- Add two drops of bleach per quart for canteens
- Use four drops for 70 oz reservoir
- Use six drops for 100 oz reservoir
- Let stand for 30 min before drinking

MICROPUR

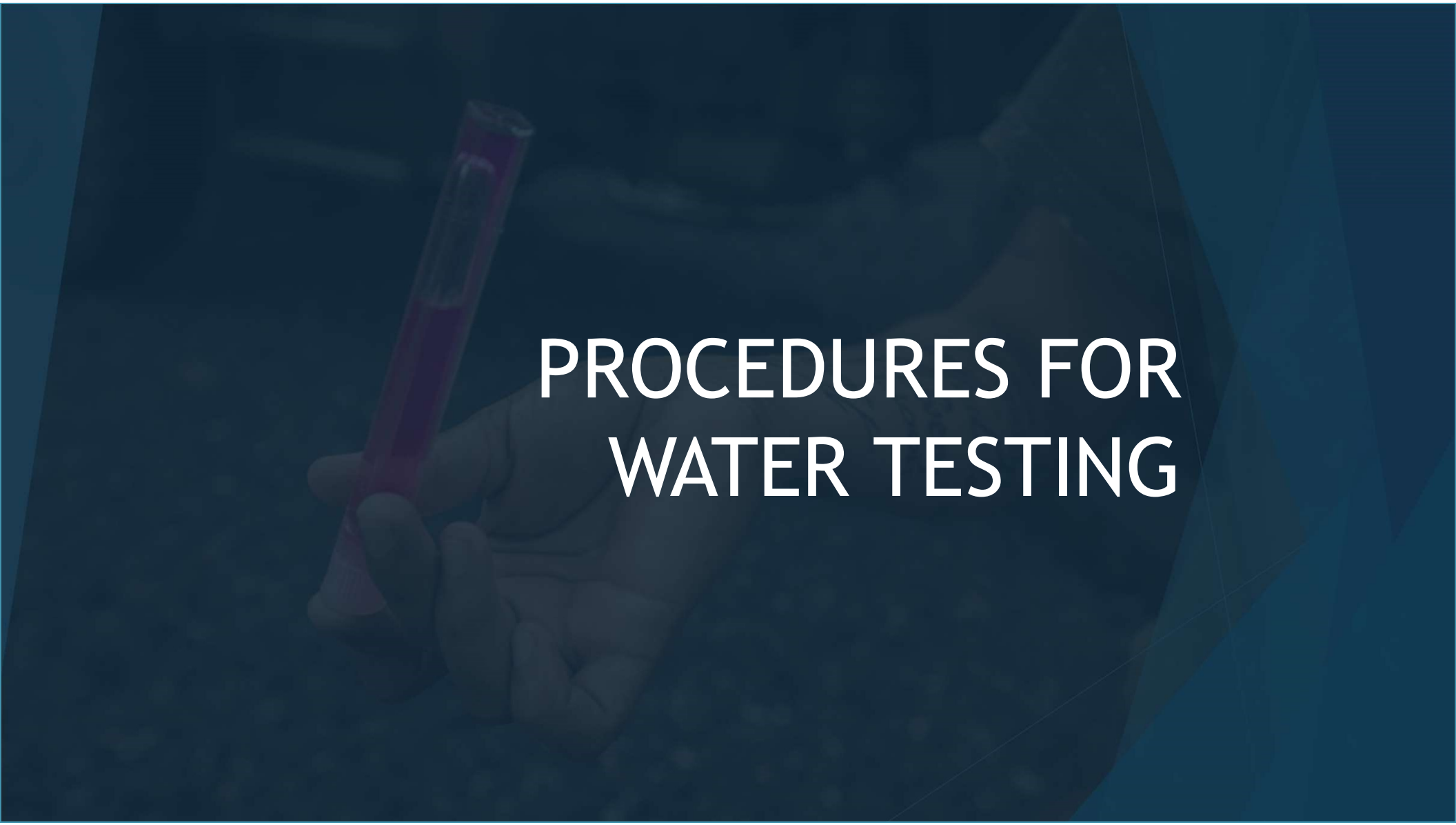
- MICROPUR is what is issued in the IFAK, CLS Bag, and CAP Bag
- Purifying water in canteens:
  - Fill canteen with cleanest water possible
  - Add one tablet to 1 quart canteen
  - Replace cap and shake to dissolve tablet
  - Wait 5 min, loosen cap and allow leakage around the threads
  - Allow 30 min contact time before consuming water, 4 hours for cold or cloudy water

MICROPUR

- Purifying water in hydration systems:
  - Fill hydration system with cleanest water possible
  - Use two tablets for 70-72 oz system
  - Use three for 100-102 oz system
  - Allow 30 min contact time before consuming water, 4 hours for cold or cloudy water

BOILING WATER

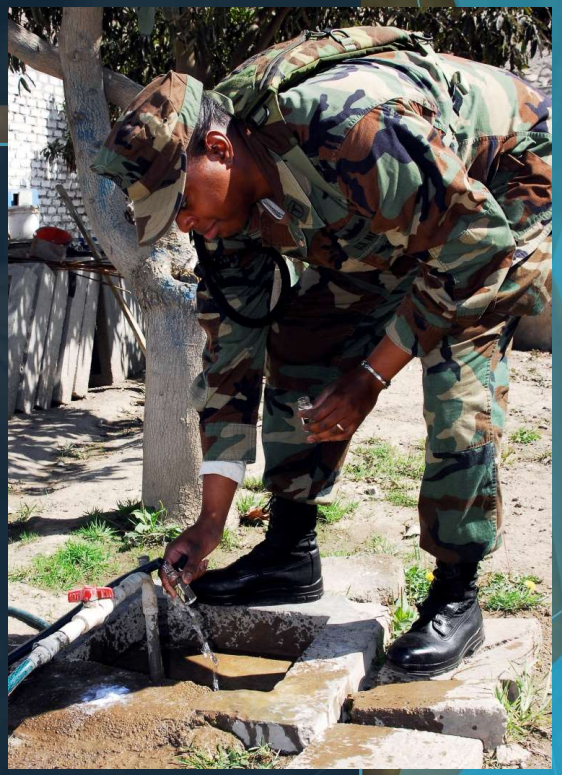
- Used in emergency situations for small amounts of water
- Vigorously boil water for 5 minutes
- Does not provide for residual disinfectant capabilities
- Not to be used to store large quantities of water



PROCEDURES FOR WATER TESTING

TESTING OF WATER

- All bulk water supplied for drinking must be tested daily for FAC
- Perform weekly bacteriological testing



WATER TESTING

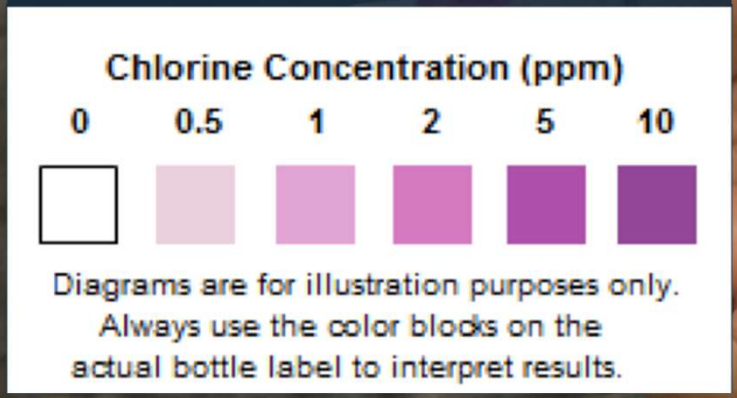
Procedure for water testing

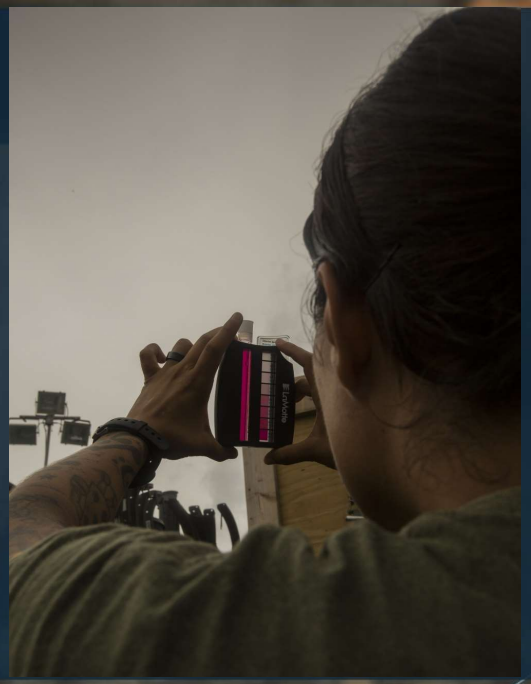
- Fill sample test tube to line
- Add (1) DPD #1 tablet, place cap on tube
- Agitate until tablet is completely dissolved
- Compare color of water to comparator

TESTING OF WATER

Acceptable Range

- Range should be between
  - 2.0 and 5.0 ppm



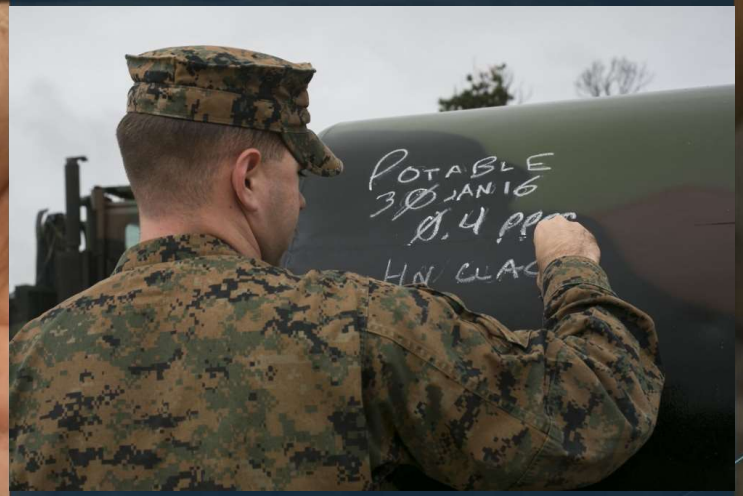


TESTING OF WATER

Required Documentation

- “Potable” / “Not Potable”
- Date
- PPM findings
- Name

Record Test Information at Source




Demonstration

Water Purification

HM3 Stephanie Solache, 8th Engineer Support Battalion,

Destroyer Squadron 40, Puerto Barrios, Guatemala, 2014.