

STANDARD SECTOR INDICATOR CODE: HE-111	Showed Improvement in Knowledge of How to Purify and Properly Store Water: Number of individuals who can identify two or more characteristics of a safe water storage vessel and at least three ways to purify water.	
HEALTH SECTOR	Sector Schematic Alignment <ul style="list-style-type: none"> • Project Area: Maternal, Neonatal, and Child Health • Project Activity Area/Training Package: Infant and Young Child Health • Project Area: Environmental Health • Project Activity Area/Training Package: WASH: Water, Sanitation, and Hygiene 	
Type: Short-term Outcome	Unit of Measure: Individuals	Disaggregation: Sex: Male, Female Age: 0-9 years, 10-17 years, 18-24 years, 25+ years

To be counted for this indicator the following criteria must be met:

- The individual must have attended training on safe water storage and water purification
- The training must have been provided by the PCV or their partner in an individual or small group setting. Research shows ideal group size is 25 individuals or less, although in some instances group size can be significantly larger. PC/Post staff determines what comprises a small group setting.
- Attendance at educational session/s must be documented by the Volunteer or their partner
- Based on results of a pre/post-test the individual must identify two or more characteristics of a safe water storage vessel and at least three ways to purify water.

Definitions:

Characteristics of a Safe water storage vessel: The container must be clean and durable and have a lid. The opening of the container should be large enough to easily fill and clean the vessel but small enough to reduce the potential of introducing contaminants from hands, dipping utensils, dust, vectors, or other sources. Water must be able to be withdrawn in a sanitary manner such as through a tap, spigot, spout or other narrow opening.

Ways to purify water: is defined as water that has been: 1) filtered through a cloth then boiled for a minimum of one minute, 2) treated with iodine 3) treated with chlorine bleach using an appropriate ratio of water to disinfectant i.e. 1/8 teaspoon of bleach to one gallon of filtered water, 4) solar water disinfection (also known as SODIS) is a method of disinfecting water using only sunlight and plastic PET bottles.

- **Boiling** is the most certain way of killing all microorganisms. Water temperatures above 160° F (70° C) kill all pathogens within 30 minutes and above 185° F (85° C) within a few minutes. So in the time it takes for the water to reach the boiling point (212° F or 100° C) from 160° F (70° C), all pathogens will be killed, even at high altitude. To be extra safe, let the water boil rapidly for one minute, especially at higher altitudes since water boils at a lower temperature (see page 68.)
- **There are two types of chemical purification:** those using iodine and those using chlorine. The effectiveness of all chemical treatment of water is related to the temperature, pH level, and clarity of the water. Cloudy water often requires higher concentrations of chemical to disinfect. If the water is cloudy or filled with large particles, strain it, using a cloth, *before* treatment. Large particles, if swallowed, may be purified only "on the outside."
 - Add the chemical to the water and swish it around to aid in dissolving. Splash some of the water with the chemical onto the lid and the threads of the water bottle so that all water areas are treated. The water should sit for *at least* 30 minutes after adding the chemical to allow purification to occur. If using tablets

let the water sit for 30 minutes *after* the tablet has dissolved. The colder the water, the less effective the chemical is as a purifying agent. Research has shown that at 50° F (10° C), only 90 percent of *Giardia* cysts were inactivated after 30 minutes of exposure. If the water temperature is below 40° F (4° C), double the treatment time before drinking. It is best if water is at least 60° F (16° C) before treating. You can place the water in the sun to warm it before treating.

- Iodine is light sensitive and must always be stored in a dark bottle. It works best if the water is over 68° F (21° C). Iodine has been shown to be more effective than chlorine-based treatments in inactivating *Giardia* cysts. Add 5 drops per quart of Liquid 2% Tincture of Iodine when the water is clear. Add 10 drops per quart when the water is cloudy. Potable Aqua is an iodine tablet product; follow the manufacturer's instructions for use.
- *Be aware that some people are allergic to iodine and cannot use it as a form of water purification.* Persons with thyroid problems or on lithium, women over fifty, and pregnant women should consult their physician prior to using iodine for purification. Also, some people who are allergic to shellfish are also allergic to iodine. If someone cannot use iodine, use either a chlorine-based product or a non-iodine-based filter, such as the PUR Hiker Microfilter, MSR WaterWorks, or the Katadyn Water Filter.
- **Chlorine Treatment** Chlorine can be used for persons with iodine allergies or restrictions. Remember that water temperature, sediment level, and contact time are all elements in killing microorganisms in the water. Treat with chlorine bleach using an appropriate ratio of water to disinfectant, i.e., add 1/4 teaspoon (16 drops) of bleach per gallon of water if the water is cloudy and 1/8 teaspoon (8 drops) if the water is clear.
- **Solar Water Disinfection (SODIS):** The SODIS method is very easy to apply. A transparent and colorless PET bottle is cleaned with soap. Then, the bottle is filled with water and placed in full sunlight for at least 6 hours. The water has then been disinfected and can be drunk.

Safe water: is defined as water that is disinfected and stored safely prior to drinking. According to WHO safe water is water that upon testing does not have detectable *E. coli* in any 100 milliliter (ml) sample.

Rationale: Unsafe drinking water along with poor sanitation and hygiene are the main contributors to an estimated 4 billion cases of diarrheal disease each year and causing more than 1.5 million deaths annually, mostly among children under 5 years of age. Treating water at the household level has been shown to be one of the most effective and cost-effective means of preventing waterborne diseases in development and emergency settings. Promoting household water treatment and safe water storage helps vulnerable populations to take charge of their own water security by providing them with the knowledge and tools to treat their own drinking water.

Measurement Notes:

1. **Sample Tools and/or Possible Methods (for Peace Corps staff use):** Volunteers should use data collection tools to measure progress against project indicators. A data collection tool to measure this indicator could be based on one of the following methods—pre/post-test—though there may be other data collection methods that are appropriate. Please check PCLive for data collection tools. Once a tool has been developed, post staff should have a few Volunteers and their partners pilot it, and then distribute and train Volunteers on its use.
2. **General Data Collection for Volunteer Activities:** All Volunteer activities should be conducted with the intention of achieving outcomes – knowledge change (short-term), skills demonstration (intermediate-term), and behavioral changes (intermediate to long term) as defined by the progression of indicators within the objectives of a project framework. The progression of measurement for all Volunteer activities should begin with baseline data being conducted prior to the implementation of an activity (or set of activities), followed by documenting any outputs of the activities and then later at the appropriate time, measurements of specific outcomes (see the bullet on “frequency of measurement”).

- 3. Activity-Level Baseline Data Collection:** This indicator builds off of indicator **HE-110: *Educated on Correct Hand Washing, Water Treatment and Safe Water Storage***, as it measures the knowledge and attitudes related to treating and storing water. Therefore, baseline data collected in the form of a pre-test for HE-110 would apply to this indicator as well.

Because Volunteers are expected to implement relevant and focused activities that will promote specific changes within a target population (see the “unit of measure” above), taking a baseline measurement helps Volunteers to develop a more realistic snapshot of where individuals within the target population are in their process of change instead of assuming that they are starting at “0.” It also sets up Volunteers to be able to see in concrete terms what influence their work is having on the individuals they work with during their service. Please note that data collection is a sensitive process and so Volunteers will not want to take a baseline measurement until they have been able to do some relationship and trust-building with the person/people the Volunteer is working with, and developed an understanding of cultural norms and gender dynamics.

- 4. Frequency of Measurement:** After taking the baseline pre-test, Volunteers must take a minimum of one measurement with the same individuals to assess whether their knowledge on how to properly store and treat water has improved. This measurement is typically taken after completing one or more activities focused on achieving the outcome in this indicator and once they have determined that the timing is appropriate to expect that the outcome has been achieved. Once Volunteers have measured that at least one individual has achieved the indicator, they should report on it in their next VRF.

Volunteers may determine to take more than one baseline and one follow-on measurement with the same individual (or group of individuals) for the following valid reasons:

- Volunteers may want to measure whether or not any additional individuals initially reached with activities have now achieved the outcome in the indicator, particularly for any activities that are on-going in nature (no clear end date);
- Volunteers may want to enhance their own learning and the implementation of their activities by using the data collected as an effective monitoring tool and feedback mechanism for the need to improve or increase their activities;
- A Peace Corps project in a particular country may choose to increase the frequency of measurement of the indicator and Volunteers assigned to that project will be required to follow in-country guidance.

In all cases, any additional data collection above the minimum expectation should be based on the time, resources, accessibility to the target population, and the value to be gained versus the burden of collecting the data. Following any additional measurements taken, Volunteers should report on any new individuals achieving the outcome in their next VRF.

- 5. Definition of Change:** The minimum change to report against this indicator is an individual correctly identified two or more characteristics of a safe water storage vessel and at least three ways to purify water as compared to what was measured initially at baseline. In the case of this indicator, if the person the Volunteer/partner works with correctly identified two or characteristics of a safe water storage vessel and at least three ways to purify water during the pre-test, then the Volunteer would not be able to count him/her for this activity because the Volunteer’s work did not actually lead to the desired change. However, if as a result of working with the Volunteer/partner, the individual’s knowledge in this area increased, that would count because the Volunteer’s work influenced this change.

- 6. General Reporting in the VRF:** The “number achieved” (or numerator) that Volunteers will report against for this indicator in their VRFs is the number of individuals who, after working with the Volunteer/partner, correctly identified two or more characteristics of a safe water storage vessel and at least three ways to purify water. The “total number” (or denominator) that Volunteers will report on for this indicator in their VRFs is the total number of individuals who participated in the activities designed to meet this indicator.
- 7. Reporting on Disaggregated Data in the VRF:** This indicator is disaggregated by “Sex” and “Age”. When reporting in the VRF, a Volunteer should disaggregate the total number of individuals by 1) male and female, 2) 0-9 years, 10-17 years, 18-24 years, and 25+ years.

Data Quality Assessments (DQA): DQA are needed for each indicator selected to align with the project objectives. DQAs review the validity, integrity, precision, reliability, and timeliness of each indicator. For more information, consult the Peace Corps MRE Toolkit.

Alignment with Summary Indicator: No link