Overview of Activities

Lesson Plan 06

Water Sampling Procedures

60 minutes total

1. Introduction
2. Water Sampling Theory
3. Water Sampling Practice
4. Review

Learning Outcomes

At the end of this session participants will be able to:

1. Identify suitable locations for water sampling
2. Identify appropriate water sampling techniques
3. Apply correct water sampling procedures

Recommended Reading

Technical Brief: Water Sampling

Poster Set: How to Collect Water Samples, CAWST WASH Resources

Materials & Preparation

Activity: Water Sampling Practice

Handout: Field Sampling Checklist, see end of lesson (print a few copies)

Sample containers or Whirl-Pak® bags (minumum two per sample point)

Sampling cup from Palintest portable test kit with wire and clip

Alcohol wipes or cotton balls to soak in alcohol

Alcohol (isopropyl or ethanol) (small bottle, approximately 100 mL)

Lighter or matches

Cooler packs (frozen)

Flashlight (torch)

Pen

Cooler box

Prepare: Locate 4-5 different types of sample points near the training area

Prepare: Sampling packages (one Whirl-Pak® bag or sterile sample container with label and one alcohol wipe), one per participant

Review Water Sampling Instructions at the end of the lesson

5 minutes

Introduction

1. Ask participants to discuss with the person next to them how they would go about taking a sample of water to test. They should consider:
   * What equipment they would need?
   * What are the steps to follow?
   * How to choose a suitable location?
2. Optional: Ask participants to share a few ideas with the group.
3. Present the learning outcomes or an overview of the lesson.

15 minutes

Water Sampling Theory

1. Ask: “What are places where we could sample water?”
2. Explain that participants will be taking their own water sample in the morning for testing, so they should pay particular attention to the sampling technique they will be using.
3. Instruct participants to turn to the sample point illustration in their workbooks.
4. Ask: “How many sample points can you identify from this illustration?”
5. Discuss typical sample points with the group:
   * Source water – shallow well, borehole, tap, lake, river, etc.
   * Transport container (before treatment)
   * Treated water (various HWT options)
   * Stored water (after treatment)
6. Explain: “Today we are going to take samples from…”
7. Explain that samples should be transported in an insulated cooler box with cooler packs or ice.

Trainer Tips

Emphasize that water samples should be tested within six hours of collection and should be discarded after 24 hours.

1. Ask participants to check the field sampling checklist in their workbooks. Ask how many of the items on the list they identified in the session opener.
2. Have participants pack the field bag with supplies using the Field Sampling Checklist or review the contents of the sampling bag if pre-packed.
3. Ask: “Why is it important to use a Field Sampling Checklist?”
   * Replacing a missing item can be difficult once in the field
   * Missing items can result in lost time and money if you cannot continue sampling without it
4. Review basic sampling instructions with participants using the Water Sampling Instructions in the workbook.

35 minutes

Water Sampling Practice

1. Explain: “We will practise taking water samples from as many sample points as are available using the correct techniques.”
2. Demonstrate collecting water samples using appropriate sampling techniques.

Trainer Tips

Typical sample points include: tap, BSF or other HWT, jerry can or other transport container, reservoir, well, flowing water (stream), storage container, rainwater harvest tank.

1. Ask for two volunteers to repeat the sampling with coaching from the other participants.
2. Repeat for four or five sample points asking for different volunteers for each sample point so that everyone can participate.
3. Invite participants to return to the classroom to debrief.
4. Have a general discussion about the sampling practice.
5. Ask: “Are there are any questions or concerns?”
6. Remind participants that they will need to collect a sample in the morning and must pick up a sampling package before the end of the day.

5 minutes

Review

1. Have participants discuss with a partner what sampling technique is most appropriate for the sample they will collect for testing the following day.
2. Summarize key points.

Key Points

* Sometimes chemical additives are used to preserve the sample before testing.  
  For example: sodium thiosulfate is used to de-chlorinate water prior to testing. This is because bacteria will die off prior to testing if water contains chlorine.
* Some Whirl-Pak® bags or other sampling containers have sodium thiosulfate included.
* Some chemical test procedures require additives (see manufacturers’ instructions).

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Water Sampling Instructions Handout

Field Sampling Checklist

Below is a sample checklist. Adapt the checklist to your needs.

|  |  |  |  |
| --- | --- | --- | --- |
| √ | Item Description | # | Initial |
|  | Clipboard | 1 |  |
|  | Pen | 2 |  |
|  | Notebook | 1 |  |
|  | Field bag/carrying case/cooler box | 1 |  |
|  | Whirl-Pak® bags (sterile) (enough for sampling exercise) | ~20 |  |
|  | Alcohol wipes or cotton balls (enough for sampling exercise) | ~10 |  |
|  | Sampling cup (from Palintest Kit ) plus wire clip | 1 |  |
|  | Alcohol (ethanol or methanol) bottle | 50 ml |  |
|  | Lighter | 1 |  |
|  | Cooler ice packs | 2 |  |
|  | Marker pen | 1 |  |
|  | Flashlight (torch) | 1 |  |
|  | Hand sanitizer bottle | 1 |  |
|  | **OPTIONAL**: (e.g. for Field Trip) |  |  |
|  | Survey questionnaires |  |  |
|  | Turbidimeter (Including: meter cap, silicone oil, cleaning cloth, tubes) | 1 |  |
|  |  |  |  |
|  | **Other:** | 1 |  |
|  | First-Aid Kit | 1 |  |
|  |  |  |  |

Water Sampling Instructions Handout

Basic Sampling Instructions

Follow these steps for every sample collected:

1. Collect at least 250 ml sample size.
   * Provides sufficient volume for error, duplicate tests, micro and chemical tests
2. Label sample before filling with:
   * Date and time
   * Sample location and description
   * Initials of person taking the sample
   * Other relevant information (ID number, project name etc.)
3. Do not place cap or lid on the ground while sampling to prevent contamination.
4. Do not rinse the sample container (sterile).
5. Do not touch the inside of the cap or sample container.
6. Store samples in an ice chest or cooler box with ice packs to keep the samples cool.
7. Remember, samples should be tested within six hours. Any samples older than 24 hours should be discarded.

Whirl-Pak® Instructions

   

  