

Safe Well Water?

Presenter Information

Summary

Participants will:

- Test a simulated water sample from a family's well.
- Identify health risks and sources of contamination associated well water.

Core Concepts

This kit is designed to engage program participants in learning about the following core concepts:

- Contaminated water can cause health problems.
- People should know if their water comes from public water systems or private wells.
- Private well water should be tested regularly and protected from contamination from microorganisms and harmful chemicals.

Presenters may need to provide further information that is appropriate for their program learning goals and for their participants.

Time Required

Approximately 20–30 minutes + discussion time

Each Kit Contains

- 2 **Safe Well Water?** kit instructions
- 2 **Fact Sheet: Well Water Safety**
- Well Water Sample (simulated)*
- Nitrate Test Solution (simulated)*
- Arsenic Test Solution (simulated)*
- Coliform Bacteria Test solution (simulated)*
- 4 Labeled droppers
- **Well Water Testing** sheet
- **Water Testing Color Charts**

**Non-hazardous chemical mixtures are substituted as simulations of these substances.*

Presenter Provides

- One **Safe Well Water?** kit for each pair of participants
- Pencil or pen
- Paper towels for clean up

Warning: Choking Hazard

This Science Take-Out kit contains small parts. Do not allow children under the age of seven to have access to any kit component.

Resources

Presenters may need to provide further information regarding well water safety that is appropriate for their program learning goals and for their participants. The following sites may be useful for program planning, updates, or background information:

- **Water on Tap** – <https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P1008ZP0.txt>
- **Private Drinking Water Wells** – <https://www.epa.gov/privatewells>

Suggested Procedure

1. For each **pair** of participants, you should provide a flat work area, one kit, and the materials described in the “Presenter Provides” section (on page i). Each kit is meant to be shared by a pair of participants and includes two copies of materials, as needed.
2. Most presenters use this kit as part of a larger program on well water safety that includes additional information appropriate to their audience. The resources section above provides ideas for follow-up components such as additional information and take-home handouts.
3. We strongly suggest use of the **Safe Well Water?** kit as an introductory activity. Ideally, this should be done with participants working in pairs to spark conversation and questions.
4. Explain to participants that they will be working in pairs to complete an introductory activity about well water safety. *You may want to point out that they may be drinking well water when they travel to areas where treated water from a public water supply is not available. Water at rural areas (campgrounds, rest areas, restaurants, and hotels) may come from wells.*
5. Explain that this activity will NOT provide all of the information that participants should know or might want to know about well water safety. The goals for the **Safe Well Water?** activity are simply to:
 - Provide an introduction to well water safety.
 - Give participants an opportunity to talk with each other about how well water safety relates to them.
 - Encourage participants to think about questions they have about well water safety.
6. Point out the disclaimer at the bottom of the Science Take-Out kit cover sheet. “The **Safe Well Water?** kit is not intended and should not be regarded as medical advice. Always seek the advice of a physician or other qualified health provider with any questions you may have regarding a health problem.”

7. Explain that you understand participants may have questions about well water safety. At the end of the activity, there will be an opportunity to discuss their questions.
8. Hand out one kit for each pair of participants. NOTE: There are 2 copies of the Participant Guide and the label in each kit bag. *You may want to inform participants that the “well water samples” and the “test solutions” in the kit are not real. They are non-hazardous chemical mixtures substituted as simulations of these substances.*
9. Encourage participants to jot down their questions about well water safety in the box on page 3 of this activity. Show them where this box is before they start to work on the activity.
10. Read the information in the box on page 1 aloud to the participants.
11. Ask participants to work with their partners to read and follow the kit instructions, discuss, and write their answers to the questions in the kit instructions.
12. After all participants have completed their kits, facilitate a group discussion of their answers to questions in the activity. Review the kit’s core concepts (see page i).
13. Cleanup: If kits are to be reused, see the *Reusing Safe Well Water kits* information below. If kits will not be reused, then participants should blot liquids with a paper towel and then put the paper towel and all kit materials into the kit bag. Discard kit bags in the trash. Participants should wash their hands after working with kit materials.
14. Provide additional information and answer participants’ questions as appropriate for the audience and/or local community. Possible discussion questions might include:
 - Why is it important to get well water tested regularly?
 - How can someone get their well water tested?
 - What causes unsafe well water?
 - What can you do if water tests reveal that the well water you are drinking is not safe?
 - Would a water purifying system help?

Helpful Hints

- We suggest using this activity as an introduction to the topic. Some participants may be uncomfortable with not having background or “the right answers” before they start. If you are doing the kit as part of a larger program, remind participants that you will provide more information and discuss their questions later; the kit is designed to get people thinking, interacting, and asking questions.
- Encourage participants to ask questions if they have difficulty understanding the activity instructions.
- Listening to the conversations as participants work will give you an opportunity to learn about participants’ interests and concerns about well water safety.
- You may find some participants are working more slowly and need questions answered or encouragement to move to the next step. If your program time is limited, you might suggest to participants how long to spend on each part of the activity.
- Let them go! For many groups, simply handing out the kits and encouraging the participants to work on their own will stimulate independent work and interactive discussion. For audiences with limited English reading skills, presenters may wish to read each kit step to the group.

Reusing *Safe Well Water?* Kits

Kits may be refilled and reused. Presenters will need to instruct participants on how to handle clean-up and return of the reusable kit materials. For example, presenters might provide the following information for participants:

Discard	Return to kit
<ul style="list-style-type: none">• Well Water Testing Sheet	<ul style="list-style-type: none">• All tubes and droppers• Fact Sheet: Well Water Safety• Water Testing Color Chart

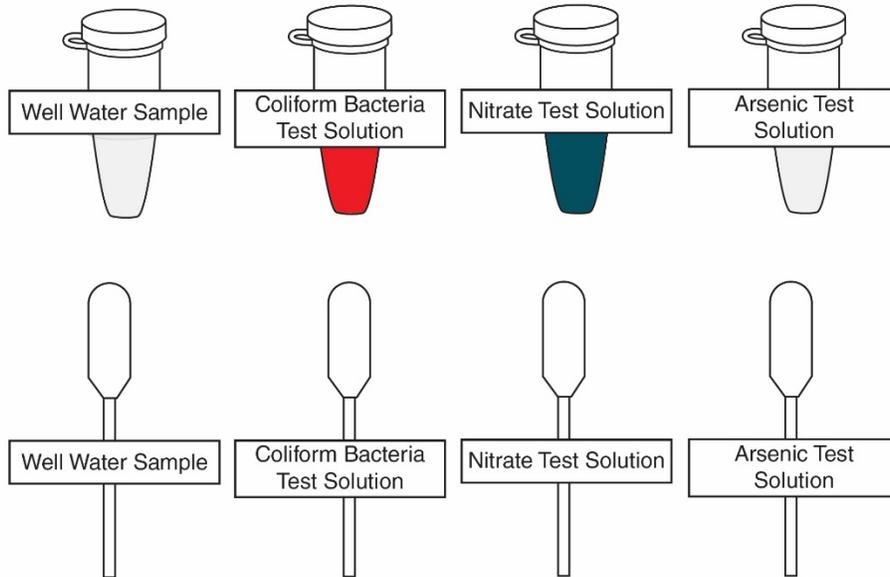
Note: It is not necessary to rinse or wash the droppers after use. Because the droppers are labeled, there is little chance for contamination. Washing the droppers may make the labels difficult to read. Simply ask participants to squirt out any extra liquid from the droppers.

If you want participants to keep copies of any handouts from the kit, you will need to make additional copies of the handouts before you re-use the kits.

Refills for the *Safe Well Water?* kits are available at www.sciencetakeout.com. The 10 Kit Refill Pack includes the following materials:

- Instructions and Quick Guide for refilling kits
- 10 mL Well Water Sample (simulated)*
- 10 mL Nitrate Test Solution (simulated)*
- 10 mL Arsenic Test Solution (simulated)*
- 10 mL Coliform Bacteria Test Solution (simulated)*
- 4 transfer pipets for refilling tubes
- 10 ***Well Water Testing Sheets***

Kit Contents Quick Guide



Fact Sheet: Well Water Safety

The U.S. Environmental Protection Agency (EPA) regulates public water systems but it does not regulate private wells. People who use private wells as their water supply must protect their well water from contamination. Well water should be tested to make sure it is safe.

Many types of well water pollution can cause health problems. Three common pollutants are bacteria, nitrates, and arsenic. Your local health department or state environmental agency can provide additional information about other potential contaminants in your area and how to test for them.

Coliform bacteria in well water:
Drainage from animal wastes, septic tanks, landfills, and garbage dumps can carry coliform bacteria into wells. Coliform bacteria can cause intestinal infections. Symptoms may include diarrhea, abdominal pain, and fever.

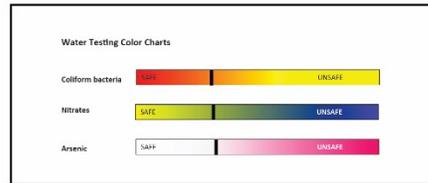
Nitrates in well water:
Nitrates are chemicals found in human and animal wastes and some fertilizers. High nitrate levels in drinking water can cause a very serious illness called methemoglobinemia, especially in babies. People with methemoglobinemia may have a blue skin color caused by low oxygen in the blood. Other symptoms include headache, dizziness, or difficulty breathing. If not treated quickly, methemoglobinemia can result in brain damage or death.

Arsenic in well water:
Arsenic is found in rocks many areas of the world. It can also come from older pesticides that remain in the soil for years. Symptoms of arsenic poisoning include headaches, confusion, diarrhea, and drowsiness. Severe arsenic poisoning may also cause vomiting, blood in the urine, or muscle weakness, hair loss, stomach pain, convulsions, or even coma or death.

If you use water from a private well, you should have the well tested every year by a state certified water testing laboratory. You should test well water more often if:

- Someone in your house is pregnant or nursing.
- There are unexplained illnesses in your family.
- Your neighbors find a contaminant in their well water.
- You notice a change in water taste, odor, color, or clarity.

It is especially important to test wells located near septic tanks, farm animal manure, fields that are fertilized with nitrate fertilizers or treated with pesticides, or garbage dumps. If your well water is contaminated, use bottled water for drinking and cooking until the well water supply is treated and tested to show that it is safe.



Well Water Testing

Coliform Bacteria Test Nitrate Test Arsenic Test

Safety Information for Presenters

Parental or Adult Supervision Required

This kit should be used only under the supervision of an adult who is committed to ensuring that the safety precautions below, and in the specific laboratory activity, are followed.

Warning: Choking and Chemical Hazard

Science Take-Out kits contain small parts that could pose a choking hazard and chemicals that could be hazardous if ingested. Do not allow children under the age of seven to have access to any kit components. Safety Data Sheets (SDS) provide specific safety information regarding the chemical contents of the kits. SDS information for each kit is provided in the accompanying presenter instructions.

Chemicals Used in Science Take-Out Kits

Every effort has been made to reduce the use of hazardous chemicals in Science Take-Out kits. Most kits contain common household chemicals or chemicals that pose little or no risk.

Safety Goggles Recommended

We encourage participants to adopt safe lab practices, and wear safety goggles when performing laboratory activities involving chemicals. Safety goggles are not provided in Science Take-Out kits. They may be purchased online or from a hardware store.

General Safety Precautions

1. Work in a clean, uncluttered area. Cover the work area to protect the work surface.
2. Read and follow all instructions carefully.
3. Pay particular attention to following the specific safety precautions included in the kit instructions.
4. Do not use the contents of this kit for any other purpose beyond those described in the kit instructions.
5. Do not leave kits or kit parts where they could be used inappropriately by others.
6. Never taste or ingest any chemicals provided in the kit.
7. Do not eat, drink, or apply make-up or contact lenses while performing kit activities that use chemicals.
8. Wash your hands after performing kit activities that use chemicals.
9. Chemicals used in Science Take-Out experiments may stain or damage skin, clothing or work surfaces. If spills occur, wash the area immediately and thoroughly.
10. Kits may be refilled and reused. Kit components that are not reused may be discarded in regular trash.

Safe Well Water?

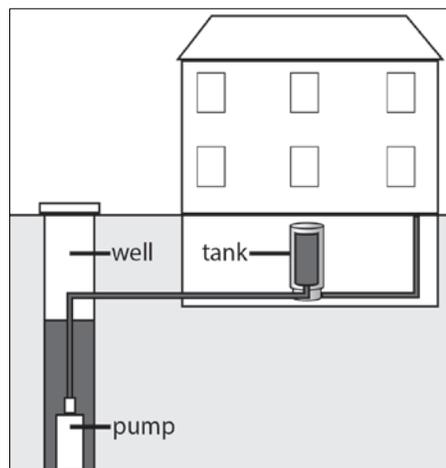
Mr. and Mrs. Nash brought their baby son, Joey, to the doctor's office. The doctor's notes are below.

Patient: Joey Nash

Age: 3 months

Symptoms: Vomiting, diarrhea, blue colored skin, weakness, and increased breathing rate

Patient History: Joey's parents report that he was healthy until several weeks ago when they moved into a rented home near a large farm. The water that the Nash family uses for drinking, cooking, and for preparing Joey's baby formula comes from their private well, not the town's public water supply.



Recommendation: The water from the Nash family's private well should be tested.

You will test water from the Nash family's well for three possible contaminants that could be causing Joey's symptoms—coliform bacteria, nitrates, and arsenic.

1. Place one drop of the well water sample into each of the circles on the **Well Water Testing** sheet.
2. Add one drop of Coliform Bacteria Test Solution to the Coliform Bacteria Test circle.
3. Add one drop of Nitrate Test Solution to the Nitrate Test circle.
4. Add one drop of Arsenic Test Solution to the Arsenic Test circle.

5. Use the **Water Testing Color Charts** in your kit to determine whether the concentration of each contaminant is safe or unsafe (too high). Record the results of the water tests in the data table below.

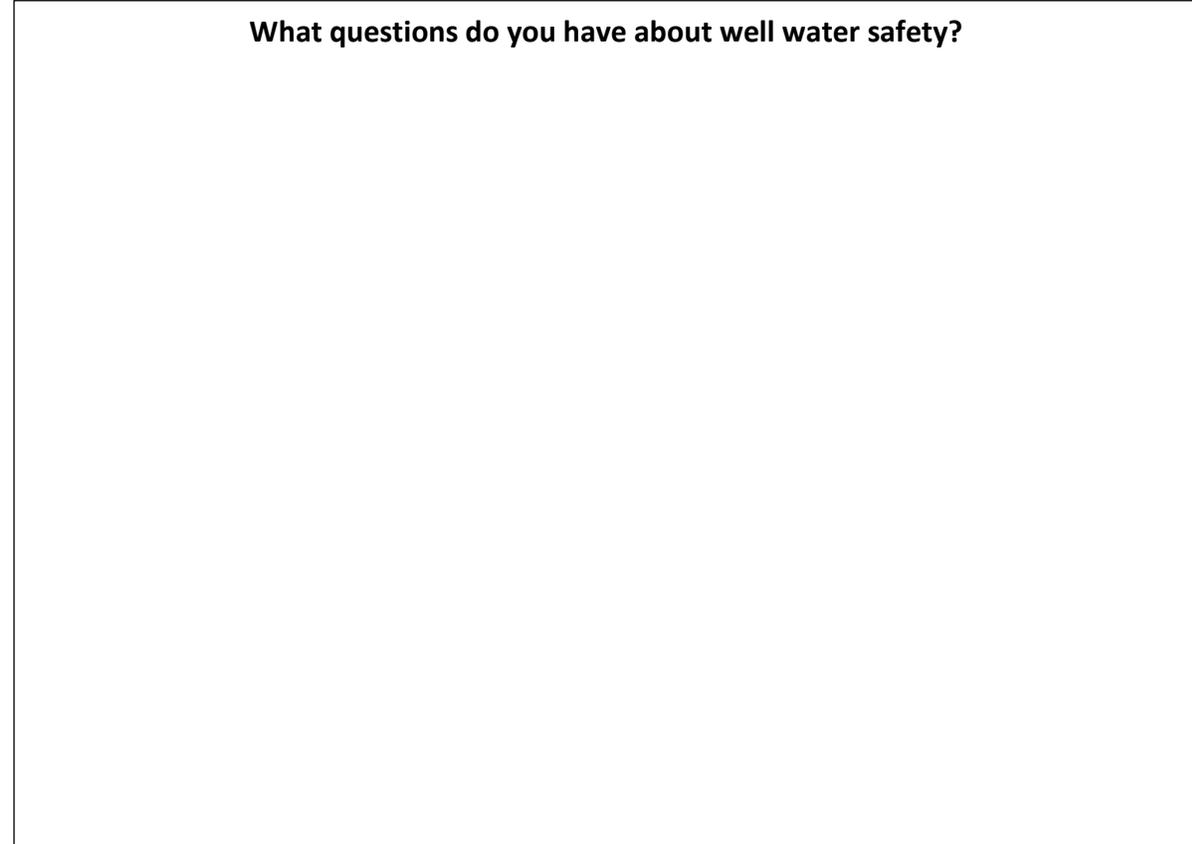
Potential Well Water Contaminant	Safe or Unsafe
Coliform Bacteria	
Nitrates	
Arsenic	

Use the information in the **Fact Sheet: Well Water Safety** (in your kit) to answer questions 6 through 9 below.

6. Which of Joey's symptoms may be caused by unsafe nitrate levels in the well water?
7. Which of Joey's symptoms may be caused by unsafe coliform bacteria levels in the well water?
8. What are some possible sources for the contaminants that made Joey sick?
9. List some things that the Nash family should do to prevent well water contamination from affecting their health in the future.

Even if your water at home is from a public water supply, you might sometimes drink well water. For example, you might travel to an area where public water supplies are not available, or you might visit friends or family who use well water.

What questions do you have about well water safety?



Section 1 Chemical Product and Company Information

Science Take-Out 80 Office Park Way
Pittsford, NY 14534
(585)764-5400

**CHEMTREC 24 Hour Emergency
Phone Number (800) 424-9300**
For laboratory use only. Not for drug, food or household use

Product	Buffer Solution pH8
Synonyms	"Well Water Sample"

Section 2 Hazards Identification

This substance or mixture has not been classified at this time according to the Globally Harmonized System (GHS) of Classification and Labeling of Chemicals.

Signal word: WARNING
Pictograms: None required
Target organs: None known

GHS Classification:
Skin Irritation (Category 3)
Eye irritation (Category 2B)

GHS Label information: Hazard statement(s):
H316: Causes minor skin irritation.
H320: Causes eye irritation.

Precautionary statement(s):

P264: Wash hands thoroughly after handling.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P332+P313: If skin irritation occurs: Get medical attention.

P337+P313: If eye irritation persists: Get medical attention.

Ca Prop 65 - This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

Section 3 Composition / Information on Ingredients

Chemical Name	CAS #	%	EINECS
Water	7732-18-5	99.09%	231-791-2
Potassium phosphate, monobasic	7778-77-0	0.72%	231-913-4
Sodium hydroxide	1310-73-2	0.19%	215-185-5

Section 4 First Aid Measures

INGESTION: Call physician or Poison Control Center immediately. Induce vomiting only if advised by appropriate medical personnel. Never give anything by mouth to an unconscious person.

INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

EYE CONTACT: Check for and remove contact lenses. Flush thoroughly with water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get immediate medical attention.

SKIN ABSORPTION: Remove contaminated clothing. Flush thoroughly with mild soap and water. If irritation occurs, get medical attention.

Section 5 Fire Fighting Measures

Suitable Extinguishing Media: Use any media suitable for extinguishing supporting fire.

Protective Actions for Fire-fighters: In fire conditions, wear a NIOSH/MSHA-approved self-contained breathing apparatus and full protective gear. Use water spray to keep fire-exposed containers cool.

Specific Hazards: During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Section 6 Accidental Release Measures

Personal Precautions: Evacuate personnel to safe area. Use proper personal protective equipment as indicated in Section 8. Provide adequate ventilation.

Environmental Precautions: Avoid runoff into storm sewers and ditches which lead to waterways.

Containment and Cleanup: Absorb with inert dry material, sweep or vacuum up and place in a suitable container for proper disposal. Wash spill area with soap and water.

Section 7 Handling and Storage

Precautions for Safe Handling: Read label on container before using. Do not wear contact lenses when working with chemicals. Keep out of reach of children. Avoid contact with eyes, skin and clothing. Do not inhale vapors, spray or mist. Use with adequate ventilation. Avoid ingestion. Wash thoroughly after handling. Remove and wash clothing before reuse.

Conditions for Safe Storage: Store in a cool, well-ventilated area away from incompatible substances.

Section 8 Exposure controls / Personal Protection

Exposure Limits:	Chemical Name	ACGIH (TLV)	OSHA (PEL)	NIOSH (REL)
	Potassium phosphate	None established	None established	None established

Engineering controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower and fire extinguishing material. Personnel should wear safety glasses, goggles, or faceshield, lab coat or apron, appropriate protective gloves. Use adequate ventilation to keep airborne concentrations low.

Respiratory protection: None should be needed in normal laboratory handling at room temperatures. If misty conditions prevail, work in fume hood or wear a NIOSH/MSHA approved respirator.

Section 9 Physical and Chemical Properties

Appearance: Clear, colorless liquid. Odor: No odor. Odor threshold: Data not available. pH: 8.0 Melting/Freezing point: Approx. 0°C (32°F) (water) Boiling point: Approx. 100°C (212°F) (water) Flash point: Data not available	Evaporation rate (Water = 1): <1 Flammability (solid/gas): Data not available. Explosion limits: Lower/Upper: Data not available Vapor pressure (mm Hg): 14 (water) Vapor density (Air = 1): 0.7 (water) Relative density (Specific gravity): Approx. 1.0 (water) Solubility(ies): Complete in water.	Partition coefficient: Data not available Auto-ignition temp.: Data not available Decomposition temp.: Data not available Viscosity: Data not available. Molecular formula: Mixture Molecular weight: Mixture
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Section 10 Stability and Reactivity

Chemical stability: Stable

Hazardous polymerization: Will not occur.

Conditions to avoid: Excessive temperatures which cause evaporation.

Incompatibilities with other materials: Acids, alkalis, and air will change the buffer's ability.

Hazardous decomposition products: Thermal decomposition will yield phosphates and sodium oxide and/or hydroxides.

Section 11 Toxicological Information

Acute toxicity: Oral-rat LD50: 3,200 mg/kg [Potassium phosphate]

Serious eye damage/irritation: Data not available

Germ cell mutagenicity: Data not available

Skin corrosion/irritation: Data not available

Respiratory or skin sensitization: Data not available

Carcinogenicity: Data not available

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: Data not available

STOT-single exposure: Data not available

Aspiration hazard: Data not available

STOT-repeated exposure: Data not available

Potential health effects:

Inhalation: May be harmful if inhaled.

Ingestion: May be harmful if swallowed.

Skin: May cause mild irritation.

Eyes: May cause mild irritation.

Signs and symptoms of exposure: To the best of our knowledge the chemical, physical and toxicological properties have not been thoroughly investigated. Specific data is not available. Exercise appropriate procedures to minimize potential hazards.

Additional information: RTECS #: TC661500 [Potassium phosphate]

Section 12 Ecological Information

Toxicity to fish: No data available

Toxicity to daphnia and other aquatic invertebrates: No data available

Toxicity to algae: No data available

Persistence and degradability: No data available

Bioaccumulative potential: No data available

Mobility in soil: No data available

PBT and vPvB assessment: No data available

Other adverse effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Section 13 Disposal Considerations

These disposal guidelines are intended for the disposal of catalog-size quantities only. Federal regulations may apply to empty container. State and/or local regulations may be different. Dispose of in accordance with all local, state and federal regulations or contract with a licensed chemical disposal agency.

Section 14 Transport Information

UN/NA number: Not applicable

Shipping name: Not Regulated

Hazard class: Not applicable

Packing group: Not applicable

Reportable Quantity: No

Marine pollutant: No

Exceptions: Not applicable

2012 ERG Guide # Not applicable

Section 15 Regulatory Information

A chemical is considered to be listed if the CAS number for the anhydrous form is on the Inventory list.

Component	TSCA	CERLCA (RQ)	RCRA code	DSL	NDSL	WHMIS Classification
Potassium phosphate	Listed	Not Listed	Not Listed	Listed	Not Listed	Uncontrolled Product
Sodium hydroxide	Listed	1,000 lbs (454 kg)	D002	Listed	Not Listed	E

Section 16 Additional Information

The information contained herein is furnished without warranty of any kind. Employers should use this information only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees.

NTP: National Toxicology Program, IARC: International Agency for Research on Cancer, OSHA: Occupational Safety and Health Administration, STOT: Specific Target Organ Toxicity, SE: Single Exposure, RE: Repeated Exposure, ERG: Emergency Response Guidebook.

Section 1 Chemical Product and Company Information

Science Take-Out
80 Office Park Way
Pittsford, NY 14534
(585)764-5400

**CHEMTREC 24 Hour Emergency
Phone Number (800) 424-9300**
For laboratory use only. Not for drug, food or household use

Product	Bromothymol blue, 0.1% aqueous solution
Synonyms	"Nitrate Test Solution" (simulated)

Section 2 Hazards Identification

This substance or mixture has not been classified at this time according to the Globally Harmonized System (GHS) of Classification and Labeling of Chemicals.

Signal word: Not classified
Pictograms: Not classified
Target organs: None known

GHS Classification: Not classified
GHS Label information: Not classified
Precautionary Statement: Not classified

Supplementary information:

Do not breathe vapors, spray or mist. Do not get in eyes, on skin, or on clothing. Wear protective gloves/protective clothing/eye protection/face protection. Wash hands thoroughly after handling. Get medical attention if you feel unwell.

Ca Prop 65 - This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

Section 3 Composition / Information on Ingredients

Chemical Name	CAS #	%	EINECS
Water	7732-18-5	99.9%	231-791-2
Bromothymol blue, sodium salt	34722-90-2	0.1%	252-169-7

Section 4 First Aid Measures

INGESTION: MAY BE HARMFUL IF SWALLOWED. Call physician or Poison Control Center immediately. Induce vomiting only if advised by appropriate medical personnel. Never give anything by mouth to an unconscious person.

INHALATION: MAY BE HARMFUL IF INHALED. MAY CAUSE RESPIRATORY TRACT IRRITATION. Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

EYE CONTACT: MAY CAUSE EYE IRRITATION. Check for and remove contact lenses. Flush thoroughly with water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get immediate medical attention.

SKIN ABSORPTION: MAY CAUSE SKIN IRRITATION. Remove contaminated clothing. Flush thoroughly with mild soap and water. If irritation occurs, get medical attention.

Section 5 Fire Fighting Measures

Suitable Extinguishing Media: Use any media suitable for extinguishing supporting fire.

Protective Actions for Fire-fighters: In fire conditions, wear a NIOSH/MSHA-approved self-contained breathing apparatus and full protective gear. Use water spray to keep fire-exposed containers cool.

Specific Hazards: In fire conditions, water may evaporate from this solution which may cause hazardous decomposition products to be formed as dust or fume.

Section 6 Accidental Release Measures

Personal Precautions: Evacuate personnel to safe area. Use proper personal protective equipment as indicated in Section 8. Provide adequate ventilation.

Environmental Precautions: Avoid runoff into storm sewers and ditches which lead to waterways.

Containment and Cleanup: Absorb with inert dry material, sweep or vacuum up and place in a suitable container for proper disposal. Wash spill area with soap and water.

Section 7 Handling and Storage

Precautions for Safe Handling: Read label on container before using. Do not wear contact lenses when working with chemicals. Keep out of reach of children. Avoid contact with eyes, skin and clothing. Do not inhale vapors, spray or mist. Use with adequate ventilation. Avoid ingestion. Wash thoroughly after handling. Remove and wash clothing before reuse.

Conditions for Safe Storage: Store in a cool, well-ventilated area away from incompatible substances. Protect from light.

Section 8 Exposure controls / Personal Protection

Exposure Limits:	Chemical Name	ACGIH (TLV)	OSHA (PEL)	NIOSH (REL)
	Bromothymol blue	None established	None established	None established

Engineering controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower and fire extinguishing material. Personnel should wear safety glasses, goggles, or faceshield, lab coat or apron, appropriate protective gloves. Use adequate ventilation to keep airborne concentrations low.

Respiratory protection: None should be needed in normal laboratory handling at room temperatures. If misty conditions prevail, work in fume hood or wear a NIOSH/MSHA approved respirator.

Section 9 Physical and Chemical Properties

Appearance: Liquid, clear, blue-green. Odor: No odor. Odor threshold: Data not available. pH: Data not available Melting/Freezing point: Approx. 0°C (32°F) (water) Boiling point: Approx. 100°C (212°F) (water) Flash point: Data not available	Evaporation rate (Water = 1): <1 Flammability (solid/gas): Data not available. Explosion limits: Lower/Upper: Data not available Vapor pressure (mm Hg): 14 (water) Vapor density (Air = 1): 0.7 (water) Relative density (Specific gravity): Approx. 1.0 (water) Solubility(ies): Complete in water.	Partition coefficient: Data not available Auto-ignition temp.: Data not available Decomposition temp.: Data not available Viscosity: Data not available. Molecular formula: Mixture Molecular weight: Mixture
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Section 10 Stability and Reactivity

Chemical stability: Stable

Hazardous polymerization: Will not occur.

Conditions to avoid: Excessive temperatures which cause evaporation. Protect from light.

Incompatibilities with other materials: Strong oxidizers.

Hazardous decomposition products: Carbon oxides, sulfur oxides and bromine gas.

Section 11 Toxicological Information

Acute toxicity: Data not available

Serious eye damage/irritation: Data not available

Germ cell mutagenicity: Data not available

Skin corrosion/irritation: Data not available

Respiratory or skin sensitization: Data not available

Carcinogenicity: Data not available

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: Data not available

STOT-single exposure: Data not available

Aspiration hazard: Data not available

STOT-repeated exposure: Data not available

Potential health effects:

Inhalation: May be harmful if inhaled.

Ingestion: May be harmful if swallowed.

Skin: May cause irritation.

Eyes: May cause irritation.

Signs and symptoms of exposure: To the best of our knowledge the chemical, physical and toxicological properties have not been thoroughly investigated. Specific data is not available. Exercise appropriate procedures to minimize potential hazards.

Additional information: RTECS #: Data not available

Section 12 Ecological Information

Toxicity to fish: No data available

Toxicity to daphnia and other aquatic invertebrates: No data available

Toxicity to algae: No data available

Persistence and degradability: No data available

Bioaccumulative potential: No data available

Mobility in soil: No data available

PBT and vPvB assessment: No data available

Other adverse effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Section 13 Disposal Considerations

These disposal guidelines are intended for the disposal of catalog-size quantities only. Federal regulations may apply to empty container. State and/or local regulations may be different. Dispose of in accordance with all local, state and federal regulations or contract with a licensed chemical disposal agency.

Section 14 Transport Information

UN/NA number: Not applicable

Shipping name: Not Regulated

Hazard class: Not applicable

Packing group: Not applicable

Reportable Quantity: No

Marine pollutant: No

Exceptions: Not applicable

2012 ERG Guide # Not applicable

Section 15 Regulatory Information

A chemical is considered to be listed if the CAS number for the anhydrous form is on the Inventory list.

Component	TSCA	CERLCA (RQ)	RCRA code	DSL	NDSL	WHMIS Classification
Bromothymol blue, sodium salt	Listed	Not Listed	Not Listed	Listed	Not Listed	Not Listed

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Section 1 Chemical Product and Company Information

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Pittsford, NY 14534
(585)764-5400

**CHEMTREC 24 Hour Emergency
Phone Number (800) 424-9300**
For laboratory use only. Not for drug, food or household use

Product	Water
Synonyms	"Arsenic Test Solution" (simulated)

Section 2 Hazards Identification

This substance or mixture has not been classified at this time according to the Globally Harmonized System (GHS) of Classification and Labeling of Chemicals.

Signal word: Not Classified
Pictograms: None required
Target organs: None known

GHS Classification: Not classified

GHS Label information: Hazard statement(s): Not classified

Ca Prop 65 - This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

Section 3 Composition / Information on Ingredients

Chemical Name	CAS #	%	EINECS
Water	7732-18-15	100%	231-791-2

Section 4 First Aid Measures

INGESTION:

INHALATION:

EYE CONTACT:

SKIN ABSORPTION:

Section 5 Fire Fighting Measures

Suitable Extinguishing Media: Use any media suitable for extinguishing supporting fire.

Protective Actions for Fire-fighters: In fire conditions, wear a NIOSH/MSHA-approved self-contained breathing apparatus and full protective gear. Use water spray to keep fire-exposed containers cool.

Specific Hazards: Data not available.

Section 6 Accidental Release Measures

Personal Precautions: Evacuate personnel to safe area. Use proper personal protective equipment as indicated in Section 8. Provide adequate ventilation.

Environmental Precautions: Avoid runoff into storm sewers and ditches which lead to waterways.

Containment and Cleanup: Absorb with inert dry material, sweep or vacuum up and place in a suitable container for proper disposal.

Section 7 Handling and Storage

Precautions for Safe Handling: Data not available.

Conditions for Safe Storage: Data not available.

Section 1 Chemical Product and Company Information

Science Take-Out
80 Office Park Way
Pittsford, NY 14534
(585)764-5400

**CHEMTREC 24 Hour Emergency
Phone Number (800) 424-9300**
For laboratory use only. Not for drug, food or household use

Product	Methyl red, 0.05% aqueous solution
Synonyms	"Coliform Bacteria Test Solution" (simulated)

Section 2 Hazards Identification

This substance or mixture has not been classified at this time according to the Globally Harmonized System (GHS) of Classification and Labeling of Chemicals.

Signal word: Not classified
Pictograms: Not classified
Target organs: None known

GHS Classification: Not classified
GHS Label information: Not classified
Precautionary Statement: Not classified

Supplementary information:

Do not breathe vapors, spray or mist. Do not get in eyes, on skin, or on clothing. Wear protective gloves/protective clothing/eye protection/face protection. Wash hands thoroughly after handling. Get medical attention if you feel unwell.

Ca Prop 65 - This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

Section 3 Composition / Information on Ingredients

Chemical Name	CAS #	%	EINECS
Water	7732-18-5	99.95%	231-791-2
Methyl red, sodium salt	845-10-3	0.05%	212-682-9

Section 4 First Aid Measures

INGESTION: MAY BE HARMFUL IF SWALLOWED. Call physician or Poison Control Center immediately. Induce vomiting only if advised by appropriate medical personnel. Never give anything by mouth to an unconscious person.

INHALATION: MAY BE HARMFUL IF INHALED. MAY CAUSE RESPIRATORY TRACT IRRITATION. Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

EYE CONTACT: MAY CAUSE EYE IRRITATION. Check for and remove contact lenses. Flush thoroughly with water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get immediate medical attention.

SKIN ABSORPTION: MAY CAUSE SKIN IRRITATION. Remove contaminated clothing. Flush thoroughly with mild soap and water. If irritation occurs, get medical attention.

Section 5 Fire Fighting Measures

Suitable Extinguishing Media: Carbon dioxide, dry chemical, dry sand, alcohol foam.

Protective Actions for Fire-fighters: In fire conditions, wear a NIOSH/MSHA-approved self-contained breathing apparatus and full protective gear. Use water spray to keep fire-exposed containers cool.

Specific Hazards: In fire conditions, water may evaporate from this solution which may cause hazardous decomposition products to be formed as dust or fume.

Section 6 Accidental Release Measures

Personal Precautions: Evacuate personnel to safe area. Use proper personal protective equipment as indicated in Section 8. Provide adequate ventilation.

Environmental Precautions: Avoid runoff into storm sewers and ditches which lead to waterways.

Containment and Cleanup: Absorb with inert dry material, sweep or vacuum up and place in a suitable container for proper disposal. Wash spill area with soap and water.

Section 7 Handling and Storage

Precautions for Safe Handling: Read label on container before using. Do not wear contact lenses when working with chemicals. Keep out of reach of children. Avoid contact with eyes, skin and clothing. Do not inhale vapors, spray or mist. Use with adequate ventilation. Avoid ingestion. Wash thoroughly after handling. Remove and wash clothing before reuse.

Conditions for Safe Storage: Store in a cool, well-ventilated area away from incompatible substances. Protect from light.

Section 8 Exposure controls / Personal Protection

Exposure Limits:	Chemical Name	ACGIH (TLV)	OSHA (PEL)	NIOSH (REL)
	Methyl red	None established	None established	None established

Engineering controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower and fire extinguishing material. Personnel should wear safety glasses, goggles, or faceshield, lab coat or apron, appropriate protective gloves. Use adequate ventilation to keep airborne concentrations low.

Respiratory protection: None should be needed in normal laboratory handling at room temperatures. If misty conditions prevail, work in fume hood or wear a NIOSH/MSHA approved respirator.

Section 9 Physical and Chemical Properties

Appearance: Liquid, clear, red. Odor: No odor. Odor threshold: Data not available. pH: Data not available Melting/Freezing point: Approx. 0°C (32°F) (water) Boiling point: Approx. 100°C (212°F) (water) Flash point: Data not available	Evaporation rate (Water = 1): <1 Flammability (solid/gas): Data not available. Explosion limits: Lower/Upper: Data not available Vapor pressure (mm Hg): 14 (water) Vapor density (Air = 1): 0.7 (water) Relative density (Specific gravity): Approx. 1.0 (water) Solubility(ies): Complete in water.	Partition coefficient: Data not available Auto-ignition temp.: Data not available Decomposition temp.: Data not available Viscosity: Data not available. Molecular formula: Mixture Molecular weight: Mixture
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Section 10 Stability and Reactivity

Chemical stability: Stable

Hazardous polymerization: Will not occur.

Conditions to avoid: Excessive temperatures which cause evaporation. Protect from light.

Incompatibilities with other materials: Strong oxidizers, reducing agents.

Hazardous decomposition products: Carbon oxides, nitrogen oxides and sodium oxides.

Section 11 Toxicological Information

Acute toxicity: Oral-rat TDL: 12000 mg/kg [Methyl red]

Serious eye damage/irritation: Data not available

Germ cell mutagenicity: Data not available

Skin corrosion/irritation: Data not available

Respiratory or skin sensitization: Data not available

Carcinogenicity: Data not available

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: Data not available

STOT-single exposure: Data not available

Aspiration hazard: Data not available

STOT-repeated exposure: Data not available

Potential health effects:

Inhalation: May be harmful if inhaled.

Ingestion: May be harmful if swallowed.

Skin: May cause irritation.

Eyes: May cause irritation.

Signs and symptoms of exposure: To the best of our knowledge the chemical, physical and toxicological properties have not been thoroughly investigated. Specific data is not available. Exercise appropriate procedures to minimize potential hazards.

Additional information: RTECS #: DG8960000 [Methyl red]

Section 12 Ecological Information

Toxicity to fish: No data available

Toxicity to daphnia and other aquatic invertebrates: No data available

Toxicity to algae: No data available

Persistence and degradability: No data available

Bioaccumulative potential: No data available

Mobility in soil: No data available

PBT and vPvB assessment: No data available

Other adverse effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Section 13 Disposal Considerations

These disposal guidelines are intended for the disposal of catalog-size quantities only. Federal regulations may apply to empty container. State and/or local regulations may be different. Dispose of in accordance with all local, state and federal regulations or contract with a licensed chemical disposal agency.

Section 14 Transport Information

UN/NA number: Not applicable

Shipping name: Not Regulated

Hazard class: Not applicable

Packing group: Not applicable

Reportable Quantity: No

Marine pollutant: No

Exceptions: Not applicable

2012 ERG Guide # Not applicable

Section 15 Regulatory Information

A chemical is considered to be listed if the CAS number for the anhydrous form is on the Inventory list.

Component	TSCA	CERLCA (RQ)	RCRA code	DSL	NDSL	WHMIS Classification
Methyl red, sodium salt	Listed	Not Listed	Not Listed	Listed	Not Listed	Not Listed

Section 16 Additional Information

The information contained herein is furnished without warranty of any kind. Employers should use this information only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees.

NTP: National Toxicology Program, IARC: International Agency for Research on Cancer, OSHA: Occupational Safety and Health Administration, STOT: Specific Target Organ Toxicity, SE: Single Exposure, RE: Repeated Exposure, ERG: Emergency Response Guidebook.