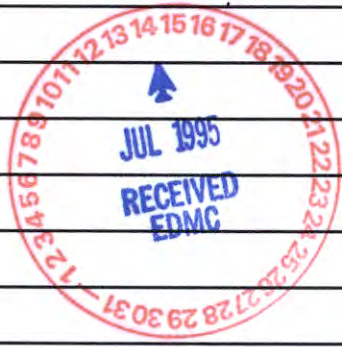


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DA ISOM (EDMC) Copy No. 007 H4-79	Transmittal Number: BHI-OP-00023-TR81 Document Number: BHI-OP-00023, Rev. 00 Title: Hydrogen Peroxide Treatment of Well 299-W19-24
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**Instructions:** (1) Remove and/or insert indicated procedure/section into manual as shown.  
 (2) Sign this form and return it to Procedures Coordination **within 10 working days of receipt.**

Procedure/Section Numbers and Titles	Remove		Insert	
	Rev	Date	Rev	Date
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If you have any questions about this release, please contact Kathy Carter (509) 372-9555.

**Receipt Acknowledgment**

I have inserted this material into the manual per the above instructions:

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**FOLD DOWN TO THE DOTTED LINE--PLEASE DO NOT STAPLE OR TAPE.**

RETURN TO: Procedures Coordination, MSIN H4-79  
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APPROVAL PAGE

Title of Document: HYDROGEN  
A PEROXIDE TREATMENT OF WELL 299-W19-24  
*lmm*  
*12/21/94*

Author(s): D. A. Myers, IT Hanford, Inc.

Approval: J. G. Zoghbi, BHI Manager, 200 Area Projects

*J. G. Zoghbi*  
Signature

*12/14/94*  
Date

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# Hydrogen Peroxide Treatment of Well 299-W19-24

Author

D. A. Myers

Date Published

December 1994



Prepared for the U.S. Department of Energy  
Office of Environmental Restoration and  
Waste Management

**Bechtel Hanford, Inc.**

Richland, Washington

Approved for Public Release

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12/21/94

HYDROGEN

PEROXIDE TREATMENT OF WELL 299-W-19-24

BHI-OP-00023  
Rev. 00


lmm  
12/21/94

Revision No. 00 <sup>21</sup> ~~12-21-94~~

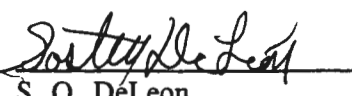
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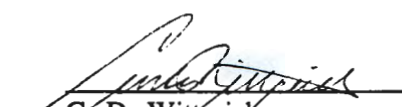
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*mm*  
12/21/94

## 1.0 INTRODUCTION

Treatment of well 299-W19-24 with an oxidizing agent is necessary to eliminate slime-producing bacteria from the water-bearing zone. Hydrogen peroxide has been selected as the preferred oxidant because it reacts fastest and exhibits the fewest negative aspects of the bactericides identified.

The Food Machinery Corporation (FMC 1984) reported that hydrogen peroxide in a concentration of 1% to 20% is the optimal range of concentration to remove "slime." The FMC (1984) experiments found that a 1% to 2% hydrogen peroxide injection was effective in removing slime bacteria and did not prove corrosive to well casings. The projected removal of slime from well 299-W19-24 will use a solution of approximately 5% hydrogen peroxide. This concentration will be added to the well bore in sufficient quantity that will, when diluted with water in the borehole, result in a well face concentration approximating 1% to 2%.

Four injections are planned to oxidize the bacteria sequentially from the immediate borehole and on into the aquifer. Each injection will be approximately 25 gal. One injection will be directly into the borehole, and three injections will be through the existing pump discharge column. All discharges (purging of the well) made during this remediation effort will be to a regulated purgewater truck. This water will then be disposed of at the Purgewater Facility.

All well treatment activities have to be recorded in the site (UP-1) field log book, at a minimum to include: date, time, volume of hydrogen peroxide, appearance of purgewater and dissolved oxygen on last injection.

## 2.0 PROCEDURE

1. Lock and tag the pump disconnect switch to ensure nonenergized condition while injecting hydrogen peroxide solutions.
2. Disconnect discharge line from the manifold on top of the well.
3. Ensure all personnel have/use appropriate personal protective equipment per job hazard analysis (JHA).
4. Connect supply hose or line from hydrogen peroxide tank to the wellhead manifold.
5. Add approximately 25 gal of 5% hydrogen peroxide into the pump column (injections 1, 3, and 4) or borehole (injection 2). (Pump or gravity flow may be used).
6. Disconnect hydrogen peroxide source from wellhead riser.
7. Connect discharge line from manifold to purgewater truck.



8. Wait 30 minutes after injecting hydrogen peroxide into well to allow for disinfection, then develop/purge (injections 1, 2, and 3). Following injection 4, wait 2 hours before developing/purging.
9. Provide well pump interlock jumpers for all development activities. Develop well by pumping until water is clear. After injection 4, pump until clear and dissolved oxygen level is less than or equal to 10 p/m. Use a dissolved oxygen meter to measure remnant oxygen (factory recommended calibration is sufficient).
10. On injection 2, introduce hydrogen peroxide to the well bore (5-in. casing). This will serve to disinfect those portions of the equipment not in direct contact with the groundwater.
11. Remove interlock jumpers and reconnect piping to return well to service.

A JHA has been developed for this activity.

### 3.0 REFERENCE

FMC, 1984, *Hydrogen Peroxide Slime Treatment*, Food Machinery Corp, Industrial Chemical Group, Research and Development, Princeton, New Jersey.

# HANFORD JOB HAZARD ANALYSIS CHECKLIST

Prepared By **C. H. St. John**      Date **11/30/94**      Area **200 W**      Bldg. **200-UP-1**

Scope/Description: **Gravity feed approximately 100 gallons of 5% Hydrogen Peroxide solution into Well# W-1924**

New  
 Revised

Emergency Contact Person(s):  
 Primary: **Hanford Fire Dept.**  
 Secondary: **N/A**  
 Emergency Radio/Phone Number: **911**

JHA Number (not required):

Specific Work Location(s): **200-UP-1 Groundwater Pump & Treat Site, 200 West Area**

**KNOWN OR POTENTIAL HAZARDS**

	Yes	No	✓	●	Reference		Yes	No	✓	●	Reference
1. Radiation Area Work	X		✓	●	RWP D-187	10. Respiratory Hazards		X	✓		
2. Hazardous Waste Operations	X		✓	●	SSHASP 200UP1	11. Electrical Hazards		X	✓		
3. Confined Space Entry		X	✓	●		12. Lock and Tag		X	✓	●	
4. Cutting/Welding		X		●		13. Scaffolding		X			
5. Roof Work		X				14. Aerial Lifts		X	✓		
6. Fall Hazards (> = 10')		X				15. Asbestos Removal			✓	●	
7. Excavation/Trenching		X		●		16. Other (see JHA Sht. 2):	X				OSHA & ACGIH
8. Asbestos Inspection Report		X		●		✓ = Formal training required. ● = Items than require a permit/form/report.					
9. Hazardous Materials	X		✓		OSHA & ACGIH						

Other Hazards	Yes	No	Control Measures
1. Temperature Extremes		X	
2. Noise		X	
3. Poor Lighting		X	
4. Animals/Insects		X	
5. Process Chemicals/Steam	X		Avoid skin & eye contact, wear rubber gloves & goggles
6. Dust		X	
7. Flammable/Cmbustible Materials		X	
8. Ladders		X	
9. Wet/Slippery Floors		X	
10. Uneven Terrain		X	
11. Open Excavations/Trenches		X	
12. Adjacent Water Hazard		X	
13. Vehicle Traffic		X	
14. Heavy Equipment		X	
15. Rigging Operation		X	
16. Manual Lifting	x		Use proper lift techniques/buddy system/lifting devices
17. Power Tools		X	
18. Pinch Points		X	
19. Falling Objects		X	
20. Sharp Objects		X	
21. Overhead Obstructions		X	
22. Site Control (Signs/Barricades)	X		Limit unauthorized access/follow RWP
23. Remote Work Area	X		Follow Site Safety Plan for emergencies
24. Other (see JHA Sht. 2):		X	

**MINIMUM DRESS REQUIREMENTS: Hardhat, substantial footwear, chem goggles, rubber gloves**

APPROVALS

Does further evaluation of the job steps, associated hazards, or safety measures need to be performed?       Yes       No

If Yes, continue job hazard analysis on the following pages.

Supervisor, Person in Charge (Signature)      Industrial Safety/Hygiene (Signature)



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