



Diving in Contaminated Waters

Course Objectives

Diving in Contaminated Waters is Dive Rescue International's renowned three day (24 hour) training program for certified divers and surface support personnel.

Contaminated water causes additional hazards and could possibly even stop a rescue/recovery operation. Almost all water is contaminated. Dive teams need to be able to recognize, identify and operate in polluted water. During this program dive team members will learn to operate in a cost-effective and proactive manner.

This program is presented in the classroom, pool and open-water to allow students to become familiar with the techniques prior to field scenarios. Successful completion of this program is measured in class participation and an end of program comprehensive test.

Key training topics and the associated objectives include:

DIVING IN CONTAMINATED WATER

- Identify polluted water considerations and equipment expectations
- Define diver exposure during active spills, routine operations, and clean-up phases
- Identify the dive requirements and make the decision of "Dive/No Dive"

CONTAMINANTS AND HAZARDS

- Define the different types of contaminants: biological, chemical, radiation, and thermal
- Describe each contaminant's hazard level, exposure limits, and lethal concentrations/dosages
- Explain equipment performance and identify the different levels of personal protection equipment

SCUBA SYSTEMS FOR DIVING IN CONTAMINATED WATER

- Identify specialized equipment for diving in contaminated water
- Discuss different types of masks, communications, suits, and other protective gear

SURFACE-SUPPLIED AIR SYSTEMS

- Identify components of surface-supplied air systems
- Define advantages of surface-supplied air systems over scuba gear

DIVE PLANNING

- Define the Risk/Benefit Factor
- Evaluate conditions and possible hazardous contaminants present at the dive site
- Make the "Dive/No Dive" decision
- Define the work zone designations: exclusion area, contamination reduction area, and support area
- Explain decontamination processes including on-site decontamination, removal of equipment and definitive decontamination



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DIVING PROCEDURES

- Describe dressing the diver, dry suit diving techniques, and scuba operations
- Differentiate between scuba operations and surface-supplied air operations

DECONTAMINATION

- Identify decontamination and rinse solutions
- Define the different levels of personal protection equipment
- Describe protective capabilities of non-diver garments
- Name the basic decontamination recommendations
- Explain the difference between gross decontamination vs. definitive decontamination
- Describe the procedure for packaging and labeling contaminated gear

EQUIPMENT MAINTENANCE

- Describe the correct equipment maintenance procedures for suits, masks/helmets, umbilicals, and air manifolds

PREREQUISITES

All students must be a member of a public safety agency and at least 18 years of age. Students must read and complete a RSTC medical statement prior to attending class. Any diver answering yes to any contraindication must have the form signed by a physician. Diving students must have proof of Dive Rescue I, Dry Suit Diver, and Full Face Mask certification.

This program is designed for personnel who are physically fit. Participants are encouraged to participate after successfully completing the IADRS Watermanship Test or testing to a fitness level of 13 MET (Metabolic Equivalents) or greater. Participants with aerobic fitness questions or concerns should consult their physician prior to in-water training. Participants who have poor aerobic fitness may attend this program as surface support personnel with the approval of the instructor.

BE SURE TO BRING

All students must bring: US Coast Guard approved PFD with knife and whistle, adequate clothing and protection from the environment and pen and paper for note-taking and sketching. Diving students must provide their own equipment: Scuba regulator: recently serviced and environmentally protected with alternate air source (i.e.: octopus, Air II, etc.), timing device, depth and submersible pressure gauges, BC with oral/power inflator, two tanks with current Hydro & VIP, mask, snorkel, fins, weight belt and two cutting tools (knife, wire cutters, or trauma shears.) Complete Dry Suit and Full Face Mask.



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DAY 1

- 8:00 Registration - Hold Harmless Agreements, - Class Schedule and Overview of Diving in Contaminated Water – Case History #1
- 9:00-10:00 Contaminants and Hazards – Biological Contaminant – Chemical Hazards – Radiation Thermal Hazards – Case History #2
- 10:00-11:00 Scuba Systems for Diving in Contaminated Water: Conventional Scuba, Full-Face Mask - Communications: Hard Wire vs. Wireless Comms – Dry Suits: Dry Suit Hoods, Dry Suit Zippers, Dry Suit Valves and Inflator Valves, Exhaust Valves - Hand Protection: Cuff Rings, Dry Gloves & Mittens – Dry Suit Underwear: Wooley Bears, Thinsulate, Open Cell Foam, Polartec – Dry Suit Accessories: Fins, Harness w/ weight system – Case History #3
- 11:00-12:00 Surface Supplied Diving – Components of Surface Supplied Diving: Compressed Air Supply, Diver's Air Manifold System, Top-Side Communications System, Diver's Umbilical, Dive Mask, Dive Helmets, Bailout System – Case History #4
- 12:00-1:00 Lunch
- 1:00-2:00 Dive Planning – Zone Management System – Operating from a boat – Dive Team Responsibilities: Dive Supervisor, Dive Manifold Operator, Dive Tender, Diver, Stand-by Diver/90% Diver, Stand-by Tender/90% Tender – Additional Dive Team Members: Inoculations/Med History – Job Hazard Analysis: Depth Decompression, Visibility, Currents, Emergency Aid, Planning for Decontamination – Case History #5
- 2:00-3:00 Diving Techniques: Dressing the Scuba Diver, Leak Testing, Tending Diver, Communications, Rules of Thirds – Full-Face Mask Techniques: Dry Suit Diving Techniques, The Contaminated Environment, Full-Face Mask Emergencies, Dry Suit Emergencies, Surface Supplied Diving: Setting up the System, Leak Testing, Tending Diver, Diver's Air Manifold, Dive Supervisor on Site, Diver's Techniques, Emergency Procedures for Surface Supplied Air – Case History #6
- 3:00-5:00 Decontamination: On Site DeCon – setup - Gross DeCon of Diver at Water's Edge, Tender Escorts Diver to DeCon Area, Diver and Tender DeCon – 3-Part DeCon – Equipment Removal – Equipment DeCon or Disposed – Definitive DeCon – Case History #7



Diving in Contaminated Waters Course Objectives

| DAY 2 | Scenario #1 |
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| 8:00-9:30 | Set up DeCon Stations: Hot, Support Zone, Contamination Radiation Zone |
| 9:30-10:00 | Dive Briefing with Divers, Tenders, Decontamination Team and Haz Mat Team |
| 10:00-10:30 | Break – Prep Dive Gear |
| 10:30-11:00 | Start Dive Operation: Pre-dive Neuro – Pre-dive Equipment Check – Backup Divers and Tenders Ready – Diver Enters Water |
| 11:00-12:00 | Diver Out of Water: Gross DeCon at water edge – Tender Escorts Diver to DeCon Line – DeCon Diver and Tender (3 stages of DeCon) – Definitive DeCon – Diver Enters Support Zone |
| 12:00-1:00 | Lunch |
| 1:00-2:30 | Set up DeCon Stations: Hot, Support Zone, Contamination Radiation Zone |
| 2:30-3:00 | Dive Briefing with Divers, Tenders, Decontamination Team and Haz Mat Team |
| 3:00-3:30 | Break – Prep Dive Gear |
| 3:30-4:00 | Start Dive Operation: Pre-dive Neuro – Pre-dive Equipment Check – Backup Divers and Tenders Ready – Diver Enters Water |
| 4:00-5:00 | Diver Out of Water: Gross DeCon at water edge – Tender Escorts Diver to DeCon Line – DeCon Diver and Tender (3 stages of DeCon) – Definitive DeCon – Diver Enters Support Zone |
| 5:00 | Clean Gear |



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| DAY 3 | Scenario #2 |
| 8:00-9:30 | Set up DeCon Stations: Hot, Support Zone, Contamination Radiation Zone |
| 9:30-10:00 | Dive Briefing with Divers, Tenders, Decontamination Team and Haz Mat Team |
| 10:00-10:30 | Break – Prep Dive Gear |
| 10:30-11:00 | Start Dive Operation: Pre-dive Neuro – Pre-dive Equipment Check – Backup Divers and Tenders Ready – Diver Enters Water |
| 11:00-12:00 | Diver Out of Water: Gross DeCon at water edge – Tender Escorts Diver to DeCon Line – DeCon Diver and Tender (3 stages of DeCon) – Definitive DeCon – Diver Enters Support Zone |
| 12:00-1:00 | Lunch |
| 1:00-1:30 | Set up DeCon Stations: Hot, Support Zone, Contamination Radiation Zone |
| 1:30-2:00 | Dive Briefing with Divers, Tenders, Decontamination Team and Haz Mat Team |
| 2:00-2:30 | Break – Prep Dive Gear |
| 2:30-3:00 | Start Dive Operation: Pre-dive Neuro – Pre-dive Equipment Check – Backup Divers and Tenders Ready – Diver Enters Water |
| 3:00-4:00 | Diver Out of Water: Gross DeCon at water edge – Tender Escorts Diver to DeCon Line – DeCon Diver and Tender (3 stages of DeCon) – Definitive DeCon – Diver Enters Support Zone |
| 4:00-5:00 | Clean Gear and Written Test |
| 5:00 | Dismiss |