

**Fisheries and Oceans Canada**  
**INTERIM POLICY FOR THE USE OF BACKPACK**  
**ELECTROFISHING UNITS**

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**Purpose**

The purpose of this policy is to establish proper safety requirements for conducting backpack electrofishing operations and to ensure that those involved in these activities use approved equipment and are trained in operating procedures and emergency preparedness. This policy has been tailored to specific working requirements and applies to all DFO employees for those Regions, Areas and laboratories as listed on page 3 (List of Appendices) and those conducting or engaged in electrofishing activities on DFO's behalf or sharing DFO's equipment.

**ELECTROFISHING POLICY**

**1. Equipment**

- a) Only “**approved backpack electrofishing units**” are to be used.
- b) All newly purchased backpack units must meet CSA standard C22.2, No. 1010.1 requirements, as revised from time to time. A list of “**recognized manufacturers**” is given in Appendix L.
- c) Any modifications, upgrades or repairs made to the electrical output or safety features of any backpack electrofishing unit, must be conducted by the manufacturer or approved agent (Appendix L) of the backpack electrofishing equipment.
- d) The annual checklist (Appendix B) must be completed by a “**qualified person**”. It is the responsibility of the District/Program Manager to designate this person and to ensure that this checklist is completed annually.
- e) Each backpack electrofishing unit must be inspected to be operating within specification by a recognized manufacturer of backpack electrofishing equipment at least once every 3 years, or 5 years if used less than 10 days per year.

**2. Safety**

- a) Electrofishing operations are not to be carried out alone. A minimum “**team**” size is two people, one of whom must be the “**crew leader**” and the other “**crew members**”.
- b) All electrofishing operations must be carried out in accordance with the “Safety Procedures for the use of Backpack Electrofishing Units” (Appendix A).
- c) All “**hazardous occurrences**” as defined under the *Canada Occupational Health and Safety Regulations* must be reported to the District/Program manager, investigated, and the results documented on the *Hazardous Occurrence Investigation Report* form (Appendix F). The completed form is to be submitted to the appropriate Regional Occupational Health and Safety Office.
- d) All DFO employees and those persons granted access to the **workplace** that are engaged in electrofishing operations in the water must have “**preplacement**” medical and periodic medical examinations thereafter as per Appendix G.
- e) All DFO electrofishing crews must have a First Aid kit on site and stocked to the latest requirement of Canada Occupational Health and Safety Regulations and Treasury Board Directives (Appendix H) during electrofishing operations.
- f) The **crew leader** must ensure that a daily backpack inspection is completed. (Appendix C).

**NB Throughout the document, all bolded terms are listed and defined in Appendix E “Terms and Definitions”. These terms are enclosed in quotation marks on first appearance in the text.**

### 3. Training

- a) All **crew members** must be trained to the satisfaction of the **crew leader** in the fundamentals of electrofishing safety before participating in any backpack electrofishing operation.
- b) The **crew leader** must be a **qualified person** and is responsible for the instruction of **crew members** in the safe use of backpack electrofishing units and emergency response procedures as per Appendix A and Appendix J.
- c) At least one **crew member** must be a **qualified person** and two members of each electrofishing **team** must have up-to-date Cardio-Pulmonary Resuscitation (CPR) and First Aid training at a level appropriate to the requirements of Canada Occupational Health & Safety Regulations, and Treasury Board First Aid Safety and Health Directive (Appendix H).
- d) This policy is not intended to supersede or otherwise preclude the application of any other policy(s) that may also apply. Additional training may be required if sampling conditions warrant. Training that may be required includes Wilderness First Aid, Transportation of Dangerous Goods, Swift Water Rescue Training etc.

### 4. Emergency Response Procedures

- a) Each electrofishing **team** must establish a means of emergency communication in order to provide backup response.
- b) Each electrofishing **team** must have an emergency response plan that all **crew members** are aware of. This plan must include, but not necessarily be limited to, emergency phone numbers for the area of operation, best and closest means of communication, evacuation route to nearest medical facility, and the role of each **crew member** in the event of an emergency.( Appendix J)

### 5. Working with Non-DFO Personnel

- a) All “**persons granted access**” to the “**workplace**” (Appendix M) including contractors, volunteers, partners and visitors – who participate in or come in contact with electrofishing activities, must abide by all DFO requirements under this policy and be given protection equivalent to that provided to DFO employees.
- b) **Equipment Loans:**
  - i) **Approved backpack electrofishing units** shall be loaned only to individuals, companies, partners or agencies who can demonstrate that they meet legislated federal and provincial safety and employment standards, and have received electrofishing training to a standard equivalent to that provided to DFO employees (Appendix M).
  - ii) Before loaning electrofishing equipment to individuals, companies, partners or agencies, managers must ensure that an explicit agreement, contract, or other instrument is established to set out the terms of the partnering arrangement. In the agreement or contract, all parties will agree to: a fair allocation of risk-taking; an acknowledged distribution of specific roles and responsibilities among the participants; and, a sharing of authority, decision-making and benefits. If non-DFO procedures will be used to accomplish electrofishing work or to comply with legislative requirements, managers must ensure that the alternative procedures provide equivalent protection and the intent of this policy is met. Please consult Appendix M for more detailed guidance on working with non-DFO personnel.

## LIST OF APPENDICES

The following appendices apply to each of the listed Regions, Areas and Science units. Those appendices marked with an X are applicable to the noted work area.

### Work Area

### APPENDIX

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
<b>Pacific Region</b>	X	X	X	X	X	X	X	X	X	X	X	X	X	
<b>Central &amp; Arctic</b>														
<b>Ontario OGLA</b>	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>GLLFAS</b>	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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## Appendix A

### Safety Procedures for the Use of Backpack Electrofishing Units

#### Preparatory Procedures

1. The backpack electrofishing unit must have passed the “Annual Checklist for Backpack Electrofishing Units” (Appendix B).
2. A **crew leader** must be designated for all backpack electrofishing activities.
3. It is the **crew leader’s** responsibility to ensure that all equipment is in “**safe working order**”.
4. An emergency response plan must be prepared and reviewed with all **crew members**.
5. The **crew leader** must ensure all **crew members** have received instruction in the fundamentals of electrofishing safety.
6. All **crew members** must read and understand the “Safety Procedures for the use of Backpack Electrofishing Units” (Appendix A) and “Electrofishing Orientation and Safety Procedures” (Appendix D).
7. The **crew leader** and at least one additional **crew member** must have up-to-date CPR and First Aid training.
8. Each electrofishing site must be visually inspected for hazards such as deep holes, submerged logs, etc. before commencing electrofishing operations.
9. In order to aid in identifying underwater hazards, all **crew members** must be equipped with polarized sunglasses that meet standard Z94.3-92 or the latest standard prescribed by Treasury Board Directives or Canada Occupational Health and Safety Regulations. Glasses also protect against eye injury caused by sticks and branches. Wide brimmed hats or peaked caps are also beneficial in increasing the effectiveness of polarized glasses.
10. The backpack electrofishing unit must meet conditions of the “Daily Checklist for Backpack Electrofishing Units” (Appendix C).
11. All **crew members** must be equipped with long armed gloves that are non-conductive, waterproof and inspected to be free of leaks. Gloves must be worn at all times during electrofishing operations.
12. All **crew members** must be equipped with chest waders that are non-conductive, waterproof and inspected to be free of leaks. Chest waders must be worn at all times during electrofishing operations by **team** members entering the water.  
<sup>1</sup>Heavy weight waders made of neoprene, silicon, polyurethane or PVC are recommended. Fabric, light weight or breathable waders are not to be worn. Wading belts are to be worn at all times.
13. All **crew members** must agree on a system of communication during electrofishing operations.
14. Backpack electrofishing units must be turned off and the battery disconnected before making any connections or part replacements.

#### Start-up Procedures

15. All **crew members** must be notified and acknowledge their preparedness prior to the commencement of electrofishing operations. The unit operator must make sure that personnel are clear of the anode before turning on the power. Hand signals are a useful way of conveying these messages.
16. Check operation of all switches and gauges. This should include high voltage check, anode switch, power switch and mercury tilt switch, audible tone generator and light. Set controls to appropriate levels. The minimum voltage possible to

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<sup>1</sup> See Smith-Root Inc. Website for recommended material thickness [www.smith-root.com](http://www.smith-root.com)

obtain the desired results should be used to avoid excessive harm to the biota and to minimize the effects of accidental shock.

### Operational Procedures

17. Operate slowly and carefully. Footing in most streams is poor and most falls occur when **crew members** are hurrying. Operations should cease when fatigue sets in.
18. **Team** members must not place their hand(s) into the water when the power is turned on.
19. Electrofishing units must be shut off prior to entering or leaving the water and the battery terminals disconnected (or generator shut off) when not in use or when transporting the unit.
20. Life jackets or Personal Floatation Devices (PFDs) must be worn where the **crew leader** considers the water is of sufficient depth or velocity for a life jacket or PFD to be effective as protection from risk of drowning. Life jackets and PFDs must be approved by Transport Canada or Canadian Coast Guard. Electrofishing should not be carried out where water depth is greater than waist deep. (See Appendix I for directive on “Protection Against Drowning”.) If not sure of standard to apply, refer to Regional Health and Safety Office for assistance or refer to DFO OH&S “**Loss Control Manual**”, Chapter 14, Personal Protective Equipment and Clothing, revised 2002) (Appendix I).
21. A **crew member** must immediately leave the water if wetness is detected in gloves or waders (by leaks, rain or perspiration) and obtain dry equipment before returning. Mild dampness from perspiration or humidity is considered normal.
22. Individuals must not participate in an electrofishing operation if they possess a medical condition that puts them at risk. Such conditions must be reported during the **preplacement** or regular medical exams as per Occupational Health Assessment Guide (OHAG)(Appendix G). These may include but are not limited to cardiac arrhythmia, pacemaker or epilepsy not confidently stabilized by medication.
23. Electrofishing operations must cease during inclement weather. (e.g. periods of any lightning or moderate rain).
24. Generators must be turned off and allowed to cool before refueling. Refueling must be done away from the water in a safe and environmentally responsible manner.

## Appendix B

### Annual Checklist for Backpack Electrofishing Units

Unit Make	Model	Serial Number
<input type="checkbox"/> unit has been serviced within the last 3 years or 5 years if used less than 10 days per year <input type="checkbox"/> electrical connections and wiring in good condition <input type="checkbox"/> no visible damage/cracks to unit casing <input type="checkbox"/> adequate protection on wiring (no visible cracks, tears or chafing) <input type="checkbox"/> voltage gauge (if fitted) indicates high voltage output working <input type="checkbox"/> controls and gauges operational <input type="checkbox"/> audible signal working <input type="checkbox"/> visual signal working (if fitted) <input type="checkbox"/> main power switch working, clearly marked and accessible <input type="checkbox"/> mercury tilt switch working when tipped in each direction <input type="checkbox"/> anode pressure switch working and resets to the "off" position when released <input type="checkbox"/> anode ring clean, in good condition, fastened securely and checked for continuity <input type="checkbox"/> anode handle in good condition and is of non-conductive material <input type="checkbox"/> cathode cable and insulation in good condition <input type="checkbox"/> cathode clean, securely fastened and checked for continuity <input type="checkbox"/> backpack frame made from non-conductive material, straps not cracked, broken or frayed, buckles operating <input type="checkbox"/> backpack quick release mechanisms working properly		

#### Power Source

##### Generator/Alternator

- ☐ electrical connectors secure and protected
- ☐ mountings secure
- ☐ exhaust directed away from operator
- ☐ unit electrically bonded/connected to frame
- ☐ engine serviced to date/oil changed
- ☐ engine clean and no oil or gas leaks
- ☐ fire extinguisher is of correct type and fully charged
- ☐ gas container(s) are of regulation type

##### Battery

- ☐ non spillable gel cell battery
- ☐ battery terminals clean
- ☐ no visible cracks/holes in casing or wires
- ☐ capable of holding full charge

#### Ancillary Equipment

- ☐ dip net handle(s) in good condition and made of non-conductive material
- ☐ First Aid kit(s) present and fully stocked
- ☐ operators manuals present
- ☐ review log book for completeness, problems, required maintenance etc.

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 Comments

☐ Unit **meets** Annual Inspection requirements    
 ☐ Unit **does not meet** Annual Inspection requirements

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 Inspected by

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 dd/mm/year

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 District/Program Manager

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 dd/mm/year

## Appendix C

### Daily Checklist for Backpack Electrofishing Units

#### Preparatory Procedures

- ☐ appropriate number of trained personnel on site (qualified persons / CPR/First Aid/others)
- ☐ emergency response plan / orientation / procedures prepared and discussed See Appendix D & J
- ☐ gloves and waders non-conductive, dry and tested for leaks
- ☐ roles of team and communication signals discussed
- ☐ all team members knowledgeable and trained in the use of available communications equipment (cell phones, radios and satellite phones)

#### Electrofishing Unit

Unit Make	Model	Serial Number
<ul style="list-style-type: none"> <li><input type="checkbox"/> annual checklist completed for current year</li> <li><input type="checkbox"/> no visible damage or cracks to unit casing / wiring / connections / controls and gauges</li> <li><input type="checkbox"/> anode ring in good condition, fastened securely / anode handle made of non-conductive material</li> <li><input type="checkbox"/> cathode cable in good condition, clean and securely fastened</li> <li><input type="checkbox"/> backpack frame and straps in good condition / quick release mechanisms working properly</li> <li><input type="checkbox"/> anode switch working and resets to the "off" position when released, high voltage discharge present</li> <li><input type="checkbox"/> controls and gauges operational</li> <li><input type="checkbox"/> audible and visual signal (if fitted) working</li> <li><input type="checkbox"/> main power switch working</li> <li><input type="checkbox"/> mercury tilt switch working when tipped in all directions</li> </ul>		

#### Power Source

##### Generator/Alternator

- ☐ electrical connectors secure and protected
- ☐ mountings secure
- ☐ exhaust directed away from operator
- ☐ unit electrically bonded/connected to frame
- ☐ engine serviced to date/oil changed
- ☐ engine clean and no oil or gas leaks
- ☐ fire extinguisher is of correct type and fully charged
- ☐ gas container(s) are of regulation type

##### Battery

- ☐ non-spillable gel cell battery(s)
- ☐ battery terminals clean
- ☐ no visible cracks/holes in casing or wires
- ☐ batteries charged

#### Ancillary Equipment

- ☐ dip net handle(s) in good condition and of non-conductive material
- ☐ First Aid kit(s) present and fully stocked
- ☐ operators manual and log book present and up to date
- ☐ communications equipment present and functioning

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 Comments

☐ Unit **meets** Daily Inspection requirements

☐ Unit **does not meet** Daily Inspection requirements

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 Crew Leader

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 dd/mm/year

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 Crew Members

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 Shocking Time Elapsed (secs)

## Appendix D

### Electrofishing Orientation and Safety Procedures

1. Everyone has the responsibility to work in a manner that is safe for themselves and their co-workers.
2. Electrofishing is an inherently hazardous activity in which safety must be the primary concern. The electrical energy used in electrofishing is sufficient to cause serious injury or death and therefore it is critical to avoid contact with the electrodes (anode and cathode) and the surrounding water while the unit is operating. Hand(s) (gloved or bare) must be kept out of the water at all times when the power is turned on.
3. Dry skin and clothing are essential to minimize electric shock. Waterproof, non-conductive waders and gloves are essential protective items. Leaks in protective clothing must be reported to the **crew leader** and wearer must leave the water immediately.
4. Any rings, chains, long hair, clothing or other personal effects that could pose a threat of snagging or entanglement or damage to waterproof equipment or connection with energized equipment or water must be remedied prior to the commencement of any electrofishing operation.
5. The backpack electrofishing unit has a main switch that must be turned off immediately if an emergency occurs. This is only initiated if doing so does not result in further risk of exposure.
6. Batteries must be disconnected or generator shut off when unit is being transported or otherwise not in use. Only **qualified persons** may assemble, or operate the backpack electrofishing unit.
7. At least two members of the electrofishing **team** must have up-to-date CPR and First Aid training. A First Aid kit and reliable means of communication must accompany all electrofishing crews. Emergency response plan and plan procedures must be known by all **crew members** including emergency phone numbers, location of, and the best route to the nearest medical facility. (See Appendix J) Any **crew member** with a medical condition, which may put them at additional risk from electrofishing, must advise the **crew leader**.
8. Each electrofishing unit must be accompanied by a log book which itemizes date of purchase, use, repairs and maintenance.
9. Signals indicating that the backpack electrofishing unit is operating must be audible or visible to all the team. Clear command signals must be established between **crew members** prior to beginning operation. **Crew members** must inform the **crew leader** of any dangerous situations.
10. Footing in most streams is difficult and falls during electrofishing can be dangerous. Movements should be made slowly and with care. The backpack electrofishing unit must be shut off while crew are entering or leaving the water. Electrofishing operations should not commence until all crew have secure footing. Deep or swift moving water causing insecure footing should be avoided and crew should inform **crew leader** if such a situation exists.
11. Electrofishing operations should be conducted in such a way that minimum harm to the environment (habitat disturbance) and the biota (fish, mammals, invertebrates, amphibians) is caused. The minimum voltage, and duration of shocking, to achieve desired results should be used so that the risks to the biota and to the crew are minimized.
12. The **crew leader** is the recognized authority and operational decision-maker. **Crew members** have the duty under Part II of the Canada Labour Code both to comply with all of the **crew leader's** instructions concerning their health and safety 126.(1)(d) and to report to the crew leader anything that is likely to be hazardous to their health or safety or to that of other employees or persons granted access to the work place 126.(1)(g). The crew leader must respond to reports of hazards 125.(1)(z.02). The **crew leader** and **crew members** must be familiar with the Internal Complaint Resolution Process 127.1 and the Refusal to Work Process 128., 129. and 131.
13. **Crew leaders** should review DFO's *Occupational Health and Safety "Loss Control Manual", Chapter 11, Internal Complaint Resolution Process and Refusal to Work* (Appendix E)



## Appendix E

### Terms and Definitions

**approved electrofishing units:** Electrofishing units are considered approved when they are purchased new from a “**recognized manufacturer**” and meet the requirements of CSA standard C22.2, No. 1010.1. Existing electrofishing units built prior to this policy coming into effect are considered approved if they meet all of the following conditions:

- A) Are listed as an approved unit as per Appendix L
- B) Have been purchased from or serviced by the **recognized manufacturer** or agent of the equipment within the past 5 years
- C) Have been checked by a **qualified person** and designated in good working order according to the Annual Checklist for Backpack Electrofishing Units (Appendix B) within the past 12 months.

**crew leader:** is a **qualified person** and is responsible for the safety of the crew and ensuring compliance with the *Fisheries and Oceans Canada Interim Policy for the Use of Backpack Electrofishing Units*.

**crew member:** is a person involved in activities pertaining to the backpack electrofishing operation who has received instruction in the safe use of electrofishers and emergency response procedures. **Crew members** must be aware of and abide by Safety Procedures for the Use of Backpack Electrofishing Units (Appendix A) and Electrofishing Orientation and Safety Procedures (Appendix D). At least one **crew member** in any electrofishing team must be a **qualified person**.

**employee:** means a person employed by an employer [(Canada Labour Code, Part II, 122.(1))]. Note that the General Duty Clause (Canada Labour Code, Part II, 124.) obligating the employer to protect the health and safety at work of every person employed by the employer, covers every person in an employment relationship with the employer, not only those who fall under the *Public Service Staff Relations Act*.

**employer:** means a person who employs one or more employees and includes an employer’s organization and any person who acts on behalf of an employer (Canada Labour Code, Part II, 122.(1)).

**field party:** means a field survey or field operations party or a party operating in an area which is generally more than two hours travel time by normally available transportation from the nearest medical facility.

**hazardous occurrence:** is an accident, illness or a “**near-miss**” arising out of, linked with, or occurring in the course of employment that results or has the potential to result in personal injury or damage to property, equipment or materials. Occupational illnesses should be investigated as though they were hazardous occurrences.

**Loss Control Manual:** The **DFO Occupational Health and Safety Loss Control Manual** is posted on the Intranet at: [http://w02intra01.ncr.dfo-mpo.gc.ca/ENGLISH/pas/osh/Manuals/losscontrol/dfo\\_osh\\_lcm.htm](http://w02intra01.ncr.dfo-mpo.gc.ca/ENGLISH/pas/osh/Manuals/losscontrol/dfo_osh_lcm.htm)

Paths for “**DFO OH&S Loss Control Manual**” (from Pacific Region Intranet Homepage) : Pacific Region Intranet Homepage/Corporate Services/Safety and Security/Health and Safety/Policy & Legislation/National Policies/DFO Occupational Health & Safety Loss Control Manual

**near-miss:** is an undesired event which in different circumstances could have resulted in harm to people, damage to property and/or loss to a process.

**persons granted access to the workplace:** include contractors, contract employees, employees from other workplaces, students, volunteers, visitors, clients, etc. (see Appendix M)

**preplacement:** means before an employee participates in the activity or as a condition of an offer of employment.

**qualified person:** means, in respect of a specified duty, a person who, because of his or her knowledge, formal training and experience, is qualified to perform that duty safely and properly (from the Canada Labour Code, Part II). See Appendix K for definition of qualified persons in each Region, Area and Science unit.

**recognized manufacturer:** means a registered company that manufactures and sells electrofishers ( Appendix L).

**safe working order:** thoroughly examined and checked out as okay as per check-list provided in Appendix B and Appendix C and understood to be working as per manufacturers specifications. There should be no signs of unauthorized or self-repair.

**team:** an electrofishing team is made up of a **crew leader** and at least one **crew member**. The team must be made up of at least two **qualified persons**. One is the **crew leader**.

**workplace:** means any place where an employee is engaged in work for the employee's employer [(Canada Labour Code, Part II, 122.(1))]. The **workplace** follows the employee wherever he or she may be while engaged in work for the employer, regardless of whether the employee's employer has direct control over the "workplace" [CLC Part II, 125.(1)].

## Appendix F

### Reporting Hazardous Occurrences

#### **FOR PACIFIC REGION:**

For reporting **hazardous occurrences** in Pacific Region, employees should refer to the following web sites:

**Pacific Region Health and Safety Intranet Website:** <http://ib.info.pac.dfo.ca/SafetySecurity/Health&Safety.htm>  
Pacific Region Intranet Homepage/Corporate Services/Safety & Security/Health and Safety

**Hazardous Occurrence Reporting Procedures:** <http://ib.info.pac.dfo.ca/SafetySecurity/OSH/Accident/AccidentMain.htm>  
Pacific Region Intranet Homepage/Corporate Services/Safety & Security/Health and Safety/Hazardous Occurrences and WCB Claims

#### **FOR CENTRAL AND ARCTIC REGION:**

For reporting **hazardous occurrences** in Central and Arctic Region, it is necessary that the local Health and Safety Committee and Regional Occupational Health and Safety office be notified immediately when there is a Hazardous Occurrence Investigation Report.

The following Central and Arctic web sites, currently undergoing revision, should also be consulted:

C&A Website: <http://intraca.dfo-mpo.gc.ca/ohs/ohs.htm>

Forms: <http://intraca.dfo-mpo.gc.ca/ohs.htm#Forms>

#### **Hazardous Occurrence Investigation Report (Central and Arctic Region only)**

- |  |   |
|--|---|
| <b>1. Type of Occurrence:</b>                    | Part II of the Canada Labour Code stipulates in subsection 125(c) that every employer has to investigate all <b>hazardous occurrences</b> . Part XV of the Canada Occupational Safety and Health Regulations (COSHR) defines which <b>hazardous occurrences</b> they must report by telephone or telex (s. 15.5) or written report (s.15.8).  |
| <b>2. Administrative Data:</b>                   | These boxes are reserved for Labour Program use only.   |
| <b>3. Basic Information:</b>                     | Give all information required, including weather if appropriate.  |
| <b>4. Description of what happened</b>           | The description should be as precise as possible. It should answer the basic questions “who?, what?, when?, where? and why?” and give an accurate picture of the events leading up to the hazardous occurrence. It should attempt to objectively determine, without trying to blame anyone, each of the factors involved in the <b>hazardous occurrence</b> .   |
| <b>5. Information about the Injured Employee</b> | This section provides information about the injured employee and the nature of the injury. The investigation should pinpoint the distinction between the direct <b>cause</b> of the injury and the Direct <b>causes</b> of the <b>hazardous occurrence</b> (covered by the following section). Take, for example, the case of an eye injury caused by a flying piece of metal: the injury happened because the piece of metal flew into the employee’s eye. However, the occurrence as such, that is, the fact that a piece of metal flew out, came about as a result of various other factors which together produced the <b>hazardous occurrence</b> . The direct cause of the injury and the direct causes of the <b>hazardous occurrence</b> are not necessarily the same. Finally, it is important to determine whether the injured employee had received any training on performing his duties safely, and if not, why not? |

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|--|---|
| <b>6. Direct Causes of Hazardous Occurrence</b>                      | <p>This section should indicate all factors identified in the investigation as being direct causes of the <b>hazardous occurrence</b>. A thorough investigation will demonstrate that:</p> <ol style="list-style-type: none"><li>1) <b>Hazardous occurrences</b> never occur as a result of one factor only, but of several;</li><li>2) These factors are closely linked: and</li><li>3) These factors generally originate outside the employee himself, and stem instead mainly from the work environment, the equipment, the organization or the task.</li></ol>  |
| <b>7. Corrective Measures and Date Employer will Implement</b>       | <p>Corrective measures will be effective if they prevent a hazardous occurrence from recurring, that is, if they eliminate each of its direct causes. This demonstrates the importance of conducting a conclusive investigation that will obtain an accurate description of the <b>hazardous occurrence</b> and reveal a precise knowledge of its causes. Furthermore, it is essential to know the date the corrective measures will become effective and equally important to know why the employer has decided not to take any corrective measures, contrary to the requirements of Part II of the Code and paragraph 15.4(1)(c) of the COSHR. Finally, the employer can also take additional measures as part of a more general accident prevention program.</p> |
| <b>8. Information about the Investigation</b>                        | <p>The person making the investigation prints his name and title, then signs the form. He must also give the date of the investigation to show whether it was carried out (and the report sent) by the fourteen days' deadline indicated in subsection 15.8(2) of the COSHR.</p>  |
| <b>9. Safety and Health Committee's or Representative's Comments</b> | <p>The safety and health committee or representative, who participates in the investigation by virtue of the authority vested in him under subsection 136(e) of Part II, records his comments on the <b>hazardous occurrence</b>, investigation, corrective measures or other related facts if appropriate. He then signs and dates the report.</p>   |
| <b>10. Circulation of the Report</b>                                 | <p>The employer sends two copies of the report to the safety officer of the district in which the work place is located within fourteen days of the hazardous occurrence, sends a third copy to the safety and health committee or representative, and keeps a fourth copy. A fifth copy is sent to the OHS office.</p>   |

## Appendix F (Continued)

### Reporting Hazardous Occurrences

<b>HAZARDOUS OCCURRENCE INVESTIGATION REPORT</b>  <b>Central &amp; Arctic Region</b>	1. TYPE OF OCCURRENCE <input type="checkbox"/> Explosion <input type="checkbox"/> Loss of Consciousness  <input type="checkbox"/> Disabling Injury <input type="checkbox"/> Emergency Procedure <input type="checkbox"/> Other _____ <div style="text-align: center;">Specify</div>		2. Department file no. Regional or District Office	
			Employer ID no.	
3. Employer's name and mailing address			Postal Code	
			Telephone number	
Site of hazardous occurrence		Date and time of hazardous occurrence		
		Conditions météorologiques		
Witnesses		Supervisor's name		
4. Description of what happened				
Brief description and estimated cost of property damage				
5. Injured employee's name (if applicable)		Age	Occupation	
			Years of experience in occupation	
Description of injury		Sex	Direct cause of injury	
Was training in accident prevention given to injured employee in relation to duties performed at the time of the hazardous occurrence? <input type="checkbox"/> Yes <input type="checkbox"/> No    Specify				
6. Direct causes of hazardous occurrence				
7. Corrective measures and date employer will implement				
Reasons for not taking corrective measures				
Supplementary preventive measures				
8. Name of person investigating		Signature		Date
		Telephone Number		
9. Safety and health committee's or representative's comments				
Committee member's or representative's name and Title		Signature		Date
		Telephone Number		

10. Two copies to Safety Officer, 1 copy to the Safety and Health Committee or Representative, 1 copy to District/Program Manager.

## Appendix G

### Occupational Health Assessment Guide - Medical Standards

The Health Canada Occupational Health Assessment Guide<sup>2</sup> (OHAG) requires that a **preplacement** (definition in Appendix E) Category III medical examination be conducted on all persons engaged in electrofishing activities. Periodic or renewals medical will be dependent on the type of medical suitable for the job duties carried out (see Table 1 & 2)

Medicals are identified according to category type.

- Category III** Medical examinations must be conducted by a physician designated by Health Canada. For a list of designated physicians, contact your local Health Canada Office.
- Category II** Medical examinations are done by an occupational health nurse. Nurses are located in the health units or Health Canada Offices at various locations throughout the Region.

Medical questionnaires and forms must be supplied by DFO Safety and Health.

**Table 1.** Standard medical requirements for staff working with electrofishers.

Examination	Preplacement	Periodic
Medical Examination Category	III	II every 5 years to age 39 years every 3 years to age 40-46 years every 2 years thereafter
Mental Health Assessment*	Yes	Yes
Visual Acuity	Class 2	Class 2
Color Vision	Class 2	Class 2
Hearing	Class 2	Class 2
EKG	Yes	if clinically indicated
Immunization Recommended	Td (tetanus / diphtheria) Hepatitis B (first aiders)	

\* to be carried out by examiner who should refer to a psychiatrist as required

**Table 2.** ‘Scientific Personnel – Field’ and ‘Electrofishers’ - Medical requirements for staff working with electrofishers, in harsh environment conditions and/or remote field operations in isolated areas on land or vessels and/or in a swift water environment and/or firearm control or use (non-enforcement only)

Examination	Preplacement	Periodic
Medical Examination Category	III	III every 5 years to age 39 years every 3 years to age 40-46 years every 2 years thereafter
Mental Health Assessment*	Yes	Yes
Visual Acuity	Class 2	Class 2
Color Vision	Class 2	Class 2
Hearing	Class 3	Class 3
EKG	Yes	if clinically indicated
Immunization Recommended	Td (tetanus / diphtheria) Hepatitis B Tuberculin Skin Test (arctic workers or workers located in communities with endemic tuberculosis) Lyme disease vaccine may be indicated in certain high-risk locations and activities.	

\* to be carried out by examiner who should refer to a psychiatrist as required

<sup>2</sup> Health Canada Occupational Health Assessment Guide, Section 2-XI-I “Electrofishers” dated June 2000 and Section 2-XII-I, “Scientific Personnel – Field”, dated January 2002.

## Appendix H

### First Aid Requirements

This appendix outlines first aid requirements as per Treasury Board's First Aid Safety and Health Directive and Chapter 16 of Canada Occupational Health and Safety Regulations. The information is included here primarily for convenience and ease of access. Whenever practical, staff should refer to source documents for the most current first aid requirements.

#### Treasury Board - First Aid Safety and Health Directive – Training

**Standard First Aid and CPR is sufficient in most situations, however, Treasury Board guidelines<sup>3</sup> require:**

*For field operations in isolated areas, specialized first-aid training will include "Field Party Advanced First-Aid, Level 1" as offered by the St. John Ambulance Association or any other organization acceptable to Health and Welfare Canada.*

This is currently known as "Wilderness First Aid" as offered by St. John Ambulance or any other organization acceptable to DFO. Standard First Aid and Level A CPR are prerequisites for Wilderness First Aid training. For the purposes of this policy, "field operations in isolated areas" is understood to mean party operations in an area which is generally more than two hours travel time by normally available transportation from the nearest medical facility as implied by the Treasury Boards definition of "**field party**" (Appendix E).

#### **Pacific Region First-Aid Training courses:**

[http://ib.info.pac.dfo.ca/SafetySecurity/training/t\\_07\\_first\\_aid.htm](http://ib.info.pac.dfo.ca/SafetySecurity/training/t_07_first_aid.htm)

Pacific Region Intranet Homepage/Corporate Services/Safety & Security/Health and Safety/Training/DFO Health and Safety Training Directory/7.0 First Aid Courses

Please note that Enhanced Wilderness First Aid courses are listed under section 7.6 of the Health and Safety Training Directory

For further information refer to the Regional Occupational Health and Safety Office.

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<sup>3</sup> Chapter 2-5 of the "Occupational Safety and Health" volume of the Treasury Board Manual (Last Revision: May 8, 1995)

## Canada Occupational Health and Safety Regulation, Chapter XVI – First Aid (May 30, 2002)

### First Aid Attendants

(1) At every **workplace** at which six or more employees are working at any time, the employer shall ensure that there is a first aid attendant.

(2) At every remote **workplace** (more than two hours response time by ambulance), at which two or more employees are working at any time, the employer shall ensure that there is a first aid attendant.

(3) At every **workplace** at which an employee is working on live high voltage electrical equipment, the employer shall ensure that:

- (a) a first aid attendant is readily available; or
- (b) at least one of the employees has the training necessary to provide resuscitation by mouth-to-mouth resuscitation, cardiopulmonary resuscitation or an equivalent direct method.

(4) At every **workplace** that is required to have a first aid attendant, the employer shall ensure that the first aid attendant at the workplace is qualified by having at least

(a) if the workplace is an office workplace for which the ambulance response time is

- (i) up to two hours, a basic first aid certificate, or
- (ii) more than two hours, a standard first aid certificate; and

(b) if the **workplace** is any other **workplace**, other than a **workplace** in a wilderness area, and the ambulance response time for the workplace is

- (i) less than twenty minutes, a basic first aid certificate, or
- (ii) twenty minutes or more but not more than two hours, a standard first aid certificate, and

(c) if the work place is in a wilderness area, a standard first aid certificate and wilderness first aid training that is specifically designed to meet the first aid needs of persons who work, live or travel in such areas.\* Standard First Aid: 2 day FA course

### SCHEDULE I (Subsection 16.7(1)) REQUIREMENTS FOR FIRST AID KITS

Item	Column I Number of Employees	Column II Type of First
1.	2 to 5 (subject to item 5)	A
2.	6 or more, where the first aid attendant is required to have at least B a basic first aid certificate	
3.	6 or more, where the first aid attendant is required to have at least C a standard first aid certificate	
4.	1, detached from the main party in a remote workplace	D
5.	1 to 3, traveling by snowmobile or other small vehicle, other than D a truck, van or automobile	

*Note: The contents of first aid kits A, B, C and D are set out in Schedule II.*



**SCHEDULE  
II  
(Subsections  
16.7(2) and  
(4))  
CONTENT  
OF FIRST  
AID KITS**

<b>Column I</b>		<b>Column 2 Quantity According to Type of First Aid Kit:</b>		
<b>Item</b>	<b>Supplies and Equipment</b>	<b>A</b>	<b>B</b>	<b>C</b>
1.	Antiseptic swabs (10-pack)	1	1	4
2.	Scissors: super shears	-	-	1
3.	Bandages: adhesive strips	12	48	100
4.	Plastic bags: waterproof, sealable	-	-	2
5.	Bandages: triangular, 100 cm, folded	2	6	8
6.	Blankets: emergency, pocket size	1	-	-
7.	First Aid Kit Container	1	1	1
8.	Dressings: combination, 12.7 cm x 20.3 cm	-	-	6
9.	Dressings: compress, 7.5 cm x 12 cm	1	2	-
10.	Dressings: gauze sterile 10.4 cm x 10.4 cm	4	12	24
11.	Dressings: gauze, non-sterile 10.4 cm x 10.4 cm	10	40	200
12.	Forceps: splinter	1	1	1
13.	Gloves: disposable	4	8	40
14.	Mouth-to-mouth resuscitation mask with one-way valve	1	1	1
15.	Record book: First Aid	1	1	1
16.	Scissors: bandage	1	1	-
17.	Self-adhering gauze bandage: 7.5 cm x 4.5 cm	2	6	24
18.	Tape: adhesive, 1.2 cm x 4.5 cm	-	-	-
19.	Tape: adhesive, 2.5 cm x 4.5 cm Additional supplies and equipment maintained outside of the kit itself	1	2	4

(for remote workplace)

20.	Blankets: bed type	-	-	2
21.	Splint set	-	1	1
22.	Stretcher	-	-	1

**SCHEDULE III (Section 16.7(3) and (4))  
ADDITIONAL FIRST AID SUPPLIES AND  
EQUIPMENT FOR REMOTE  
WORKPLACES**

<b>Column I</b>		<b>Column II</b>
<b>Item</b>	<b>Supplies and Equipment</b>	<b>Quantity</b>
1.	Guide on wilderness first aid	1
2.	30 mL (6 teaspoonfuls) table salt, sealed in strong plastic bag	1
3.	30 mL (6 teaspoonfuls) baking soda (not baking powder), sealed in strong plastic bag	1
4.	60 mL (12 teaspoonfuls) sugar, sealed in strong plastic bag	1
5.	1 litre plastic bags	5
6.	Large plastic garbage bags	2
7.	Patient treatment record forms, which include vital sign recording sections	3
8.	Oral temperature thermometer in an unbreakable case	1
9.	Emergency signalling mirror	1
10.	Blanket: emergency, pocket size	1
11.	Anti-itch ointment/lotion/swabs (10-pack)	2
12.	Scissors: super shears	1
13.	Bags: disposable, waterproof, emesis	4
14.	Burn jelly (5 mL)	4
15.	Plastic bags: waterproof and sealable for disposal of contaminated waste	2
16.	Cold packs: instant type	2
17.	Hot packs: instant type	2

*Note: In addition to the type A first aid kit and the above items, an effective means of communication with the base camp of operations must be available. The contents of a type A first aid kit are set out in Schedule II.*

## Appendix I

### Personal Protective Equipment Standards

#### Protection Against Drowning (from Chapter 14.4.10 Loss Control Manual)

Where there is a hazard of drowning, people in the workplace must wear:

- A life jacket or buoyancy device that meets or exceeds the standards set out in the Canadian General Standards Board Standard CAN2-65.7-M88 *Life Jackets, Inherently Buoyant Type* as amended from time to time; or
- 65.11-M88 *Standard for Personal Flotation Devices* as amended from time to time; or
- use a safety net or a fall-protection system.

Life Jackets or buoyancy devices shall be equipped with such signaling devices as are appropriate to the body of water where the work is being performed or for the distance offshore.

Where there is a risk of hypothermia due to falling into cold water or where unassisted survival may have to be maintained for periods greater than one hour, devices or insulated clothing that meet or exceed the Canadian General Standards Board Standard for *Marine Anti-Exposure Deck Work Suit* must be used.

Appropriate emergency equipment must be provided and held in readiness. If appropriate, an inherently buoyant powered boat that meets the requirements of *Transport Publication #1332 Construction Standard for Small Vessels* must be provided and held in readiness. A *qualified person* must be available to operate all emergency equipment.

Where a **workplace** is a wharf, dock, pier, quay or other similar structure, a ladder that extends at least two rungs below water level must be affixed to the face of the structure every 60 m along its length.

#### Written Procedures (from Chapter 14.4.10.1 Loss Control Manual – See Appendix K)

At any work location or training location where there is a danger of drowning, written procedures must be available to and explained to all employees. The procedures must cover the emergency procedures to be followed, the responsibilities of all people involved and the location of all emergency equipment.

#### Eye and Face Protection (from Chapter 14.4.1 Loss Control Manual)

Suitable eye and face protection must be provided where machines or operations have the potential to produce flying objects, or where there is direct or reflected brightness, hazardous liquids, injurious radiation or a combination of these hazards. The protection supplied shall meet or exceed the requirements of CSA Standard Z94.3-92 *Industrial Eye and Face Protectors* as amended from time to time.

Where eye protection against ultraviolet radiation (UVR) associated with sunlight is required, Departments shall provide sunglasses that meet:

- a. ANSI Z87.1-89; and b. in cases where traffic light recognition is also required, ANSI Z80.3; both as amended from time to time.

Contact lens wearers must use the same eye protection equipment as that required for other employees performing the same tasks. Contact lenses must not be worn by those whose work requires them to regularly wear a respirator, or those who are routinely exposed to irritating fumes, intense heat, liquid splashes, molten metal or other similar environments.

**NOTE:** Prescription safety lenses will be provided in situations where:

- i. The nature of the work is such that the protective prescription lenses are installed in specialized protective frames such as in goggles and other eye protection, which is not normally worn off the job, or
- ii. it is impractical to wear protection over glasses because of distortion.

## **Appendix J**

### **EMERGENCY PLAN AND PROCEDURES DAILY CHECK LIST**


**Crew Leader:** \_\_\_\_\_

**Crew Members:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Electrofishing Location:** \_\_\_\_\_

**Map to Nearest Medical facility:**



**Location of Safety Equipment:**

**Throw bags, first aid kit, life jackets, cell phone/radio -**

**Emergency Telephone Numbers:**

Police:

Rescue:

Ambulance:

Hospital:

Manager:

## **Appendix K**

### **Definition of “Qualified Persons”**

#### **Pacific Region:**

- A person who has completed the two day electrofishing training course offered by Malaspina University-College (BC Workers' Compensation Board “recognized trainer” for backpack electrofishing). All crew leaders must achieve “Crew Supervisor” status in the training course.

#### **Central and Arctic Region:**

- In the Ontario-Great Lakes Area (OGLA), a qualified person shall possess a valid certificate from the Ontario Ministry of Natural Resources, “Class 1” or “Class 2” Electrofishing Course or an equivalent of training.
- In the Great Lakes Laboratory for Fisheries and Aquatic Science (GLLFAS), a qualified person shall possess a valid certificate from the Ontario Ministry of Natural Resources, “Class 1” or “Class 2” electrofishing course or an equivalent of training.

## Appendix L

### Recognized Manufacturers and Approved Backpack Electrofishing Units

#### List of Recognized Manufacturers for Purchase and / or Repair of Backpack Electrofishing Units:

**Smith-Root, Inc.**

14014 NE Salmon Creek Ave.  
Vancouver, WA 98686 USA

**University of Wisconsin**

Engineering Technical Services Department  
1500 Engineering Drive  
Madison, Wisconsin, 53706, USA

**Halltech Environmental Inc.**

129 Watson Rd. S.  
Guelph, ON  
Canada  
N1L 1E4

#### List of Approved Backpack Electrofishing Units:

All the following listed units, even though they do not meet CSA standard (with the exception of Smith Root LR-24 which has recently been certified to meet the requirements of CSA standard C22.2, no. 1010.1), are **approved electrofishing units** as long as they meet the safety criteria as listed for approved units in Appendix E. Please note that there were some Smith-Root LR-24 machines which were sold before this particular model was officially certified to meet CSA standard. Uncertified LR-24 units can be returned to Smith-Root for credit and exchange to certified units. Please contact Smith-Root for costs and other details. All certified Smith-Root LR-24 units have serial number starting with the letter D or higher and are labeled with white ETL stickers under battery covers. All newly purchased electrofishing units must meet the requirements of CSA standard C22.2, No. 1010.1, as revised from time to time.

Smith Root Inc.	Halltech Environmental Inc.	Coffelt Inc.	U of W
Smith Root VIII	HT – 2000	Mark 12	ABP2
Smith Root VIII-A		or newer	
Smith Root XI			
Smith Root 11A			
Smith Root 12			
Smith Root 12A			
Smith Root 12B			
Smith Root 15A			
Smith Root 15B			
Smith Root 15c			
Smith Root 15d			
Smith Root LR-24 (available certified to CSA standard C22.2, No. 1010.1)			

## Appendix M

### Standards and Approaches for Working with Non-DFO Personnel

The following information appears in the Introduction from “A Guide on the Safety Responsibilities of DFO in Relation to Contractual Agreements, Partnering and Volunteers”. This Guide is posted on the National OHS web site at: <http://w02intra01.ncr.dfo-mpo.gc.ca/ENGLISH/pas/osh/policy.html>. It is also appended to Chapter 6 of DFO Occupational Health and Safety **Loss Control Manual**. Managers should consult the Guide before engaging the services of or loaning equipment to non-DFO personnel.

- a) Fisheries & Oceans Canada has a responsibility to ensure that the health and safety at work of every person employed by the employer is protected. Managers must endeavour to prevent all types of accidents and incidents that could result in injury, loss of life or property damage from occurring. This responsibility, in turn, requires the Department to ensure that the activities of every person granted access to the **workplace** do not endanger the health and safety of employees or themselves. This applies to contractors, volunteers, students and visitors to our sites of operation.
- b) To promote effective and efficient program delivery, DFO often enters into agreements with outside individuals, groups or organizations. As well as dealing with independent contractors, the Department engages in partnering or resource sharing relationships with universities, community groups, visiting scientists, volunteers, etc. These relationships should be formalized in written agreements similar to the contracts made with independent contractors.
- c) Changes to the Canada Labour Code, Part II, enacted in 2000, place additional legal requirements on the Crown when dealing directly and indirectly with persons, other than employees, in the workplace. This is summarised in Section 125 (1)(w) of the Code that requires the employer, “to ensure that every person granted access to the work place by the employer is familiar with and uses in the prescribed circumstances and manner all prescribed safety materials, equipment, devices and clothing”, and in Section 125 (1) (y) that requires the employer to, “ensure that the activities of every person granted access to the work place do not endanger the health and safety of employees”. In addition, Section 125 (1)(z.14) requires the employer (DFO) to, “take all reasonable care to ensure that all persons granted access to the workplace, other than the employers’ employees, are informed of every known or foreseeable health and safety hazard to which they are likely to be exposed in the work place.”
- d) The emphasis of this document will be on due diligence and will suggest ways and means whereby such diligence can be enhanced to avoid injuries, loss or damage and to reduce Departmental or individual liability.
- e) The use of the term “employer” in this Guide will refer to the Fisheries & Oceans Canada or any organisation or person acting on behalf of the Department, with special emphasis on managers and supervisors. Ultimately, the manager or supervisor may be held responsible, liable and accountable for injuries or damages sustained by people providing a service to or performing work for DFO.

Note: for Pacific Region, procedures and processes as stipulated in the Visitors and Volunteers Policy should also be followed where applicable.

The path for the Visitors and Volunteers Policy is: Pacific Region Intranet Homepage/Corporate Services/Finance & Administration/Partnering & Alternate Services Delivery/Risk Management Tools.