Disinfection of Coded Wire Tagging Equipment

Application Note APC12
Technical Note TNC12

The possibility of spreading fish diseases between culture facilities and watersheds is of concern to both our customers and Northwest Marine Technology. Although we are unaware of a case of coded wire tagging equipment, moved between locations, as having served as a "vector" in spreading a disease, the consequences of such occurrences call for stringent preventative measures. Disinfection procedures should also be implemented between groups of fish, within a facility, when signs of disease exist. Tagging should not be conducted during a severe outbreak of disease.

Except on the interior mechanisms of NMT tag injectors, chlorine solutions are recommended for use as disinfectants on tagging equipment. Commonly used sources of chlorine are calcium hypochlorite *("HTH")* and solutions of sodium hypochlorite ("bleach"). Household bleach comes in a concentration of about five- percent so that to achieve the desired concentration one would dilute an ounce of bleach in each two gallons of water (a ratio of 1:250). Stronger solutions may be available at fish rearing facilities so that a lesser proportion of material would be required to achieve the desired concentration (200-PPM) of active ingredient. A promising alternative is a solution of chlorine dioxide (sold under various trade names including *Qxine* [CH2O, International]). This material appears to be far less corrosive and less hazardous than the previously mentioned chlorine solutions. In order to reduce corrosion, alcohol (70 - 90%) is recommended as the disinfectant and cleaning agent, for the interior mechanisms of the Mark IV and other NMT equipment.

Calcium hypochlorite and sodium hypochlorite solutions are highly toxic to fish but can be neutralized by adding sodium thiosulfate or sodium sulfite to the solution. As a "rule of thumb", if a five- percent solution of these chlorine compounds is used as a disinfectant, they can be neutralized by adding an equal weight of either chemical. For example, one ounce of 5% bleach added to two gallons of water would be neutralized by one ounce (dry weight) of either sodium sulfite or sodium thiosulfate. If the chlorine solution is stronger, the weight of the neutralizing agent should proportionately increase. As an added precaution, "neutralized" disinfectant should not be poured directly into water containing fish. *Prior to the use of any disinfectant, read and understand the Material Safety Data Sheets (MSDS) for each product.*

Equipment and Supplies for Disinfecting/Cleaning Binary Coded Wire Tagging Equipment.

In addition to the disinfectants indicated above, the following equipment and supplies are recommended:

Two spray bottles for dispensing alcohol and chlorine solutions Tap (pathogen free) water 50 ml syringe with 20 gauge needle Wiping sponge/cloth Cotton tipped applicators ("Q-tips") A 2 - 3 inch length of blank/excess coded wire CWT tool kit CWT injector instruction manual Paper towels An open container for soaking machine parts A pump and appropriate fittings for circulating disinfectant through a QCD A large open container for holding and catching disinfectant pumped through a QCD Material Safety Data Sheets Rubber gloves Eye protection Particle masks or respirator

The Quality Control Device (QCD).

Attach the QCD to the MK IV injector, power source, and tap water, allowing the water to run through the device for several minutes. During this period, divert the flow through both gates by activating the solenoid valve by pressing [STEP) on the control panel of the MK W. Using tap water and sponge, wipe down the exterior surfaces of the QCD taking care to remove extraneous material. Following this, choose a well-ventilated work location. Place the QCD on a clean surface that has been disinfected with a chlorine solution or other suitable disinfectant.

With the QCD attached to the Mark IV and power, spray and wipe down the exposed surfaces of the QCD with a chlorine solution including all surfaces of the legs. Remove the cover and repeat the process on the exposed surfaces, including inside the cover, taking care to reach all of the nooks and crannies. The most practical, and recommended, procedure that follows requires the use of a pump to recirculate chlorine solution through the QCD. Prepare enough solution to operate the pump and place the container in a position to catch the solution exiting the discharged ports, as it is pump/recirculated through the machine. Allow this to occur for several minutes while diverting the flow through both gates by again activating the solenoid valve.

After letting the equipment stand for 15 minutes, rinse the surfaces with tap water and then run tap water through the QCD while again activating the solenoid valve. Allow the QCD, with cover removed, to dry in sunlight if possible.

Mark IV Injector.

Using tap water and sponge, wipe down the exterior surfaces of the injector taking care to remove extraneous material. Repeat this procedure with the touch switch, power supply and attendant cords. Following this, choose a well-ventilated work location ***free from hazards that could ignite alcohol.*** Place the injector on a clean surface that has been disinfected with the chlorine solution. Cap-off the electrical outlets and wipe all the exterior surfaces with the chlorine solution. Without wetting the electrical connections with the disinfectant, thoroughly wipe the touch switch, power supply and attendant cords.

Remove the head mold and clean with the chlorine disinfectant. DO NOT USE alcohol on the head molds. Alcohol may damage the surface material. Open the injector and remove the tagging needle, needle carrier, clamping nut and dismantled cutter. Immerse these parts into a container of chlorine disinfectant. Remove the screws holding the head mold (positioning jig) and' immerse in the same solution. Immerse tools, and other contents of the kit including the case, into the disinfectant. Remove the lower drive roller pressure arm and the rear wire guide. There is an E clip holding the needle arm on the drive cam. Remove it and the needle arm. Spray the alcohol solution onto the exposed interior surfaces (including the case) taking care to include drive rollers, wire guides, tension spring, drive roller latch (in both up and down positions), hinges, lower drive roller arm, and all screws. With alcohol wetted Q-tips, thoroughly clean all surfaces and orifices/tubes of the head mold holder, needle carrier, needle carrier clamp, vertical inspection hole, cutter motor drive pin, cutter motor block including hole for cutter pin, and alignment pin. Shift the moving parts to and fro during the process to insure that all surfaces are exposed to the cleansing agent. Remove the caps from the electrical outlets and spray with the alcohol solution allowing evaporation to occur prior to replacing the caps. Similarly spray the electrical connections of the power supply and touch switch.

Rinse the soaking injector parts, tools and case in tap water. Remove any debris adhering to the cutter parts. Using a length of tagging wire dipped in alcohol; probe the holes in the cutter sleeve and cutter pin to clear them of any material. Insert the tagging needle into the 20-gauge barrel of a alcohol4oaded syringe and force a stream through the tagging needle. After removing the hypodermic needle from the loaded syringe, force

alcohol through the tagging needle carrier. Remove the soaking parts and tools, spray with alcohol, and reassemble the parts using disinfected tools. After replacing the 20-gauge hypodermic needle onto the loaded syringe, fit it over the refitted tagging needle and force alcohol through the needle, toward the interior of the injector, until a steady stream reaches through to the drive rollers. Using the same syringe, insert it into the wire guide leading to the drive rollers, and force alcohol through until a steady stream reaches the drive rollers. Allow the equipment to dry in sunlight if possible.

Handheld "Multishot" Injector.

Disassemble the injector according to the instructions in the user's manual. Use tap water and sponge to remove extraneous material. Clean all parts in chlorine disinfectant. Use a piece of tag wire dipped in alcohol to clean the inside of the needle, holes in the cutter pin, holes in the cutter sleeve, and the inside of the feed tube. Use alcohol and cotton swabs as the final cleaning step for all parts (except alcohol should not be applied to the head mold, since alcohol will damage the surface material of the head molds). Dry all surfaces before reassembling; **especially the cutter sleeve and cutter pin to prevent corrosion.**

Portable and Wand Detectors.

Rinse the surfaces of the detectors with tap water removing any extraneous material in the process. Place the equipment on a clean, disinfected surface and spray liberally with a chlorine solution. Allow the equipment to stand for about 15 minutes, rinse again with tap water, and allow to dry in sunlight if possible.

Other tagging paraphernalia.

Care must also be taken to disinfect nets, buckets, hoses, boots, rain gear and any other equipment that has come in contact with fish or fish-bearing water that could serve as a "vector for diseases.

Procedures Involving Tagging Trailers.

Large scale coded wire tagging operations may involve mobile trailers each housing several tagging units. Disinfection of equipment in these trailers is very similar to the previously described procedures, but in most cases domestic water will not be readily available.

Carefully remove extraneous material from the trailer and equipment using a wash down hose and sponge. Don the protective clothing, and conform to other precautions, recommended in the MSDS and open all doors and windows. Into a measured amount of water in a large container, such as holding tank or "tote", add an amount of chlorine disinfectant required to achieve the desired concentration. Immerse the main trailer water pump into the container.

The next procedures follow those already described in previous sections, with the wash down hose used to apply the disinfectant to chlorine disinfectant. Distant must be applied to all surfaces that have, or may have, come in contact with fish or hatchery water. In this case, since tap water is unavailable, the disinfectant is not rinsed from the tagging equipment until the trailer arrives at its next tagging station.