

Safe Work Instruction – Fluoride Operations at Bendeela WTP

DO NOT enter the Fluoride Plant Room unless you are a qualified Fluoridation Plant Operator or have been inducted in its safe use and operation and either accompanied by a qualified Fluoridation Plant operator or have completed the Risk Assessment Checklist (RAC) for Fluoridation Plant Mech/Elec Servicing Works.

This SWI may not cover all possible hazards and risks and should be referred to as a control measure in the risk assessment process. Additional training may be required for high risk plant. Site and task may change required PPE.

PERSONAL PROTECTIVE EQUIPMENT



Eye protection must be worn when wearing half face mask



Long and loose hair must be contained or covered.



Disposable overalls must be worn



Foot protection must be worn (gumboots or safety boots)



Hand protection must be worn (rubber gauntlets)



Full P3 face mask must be worn when airborne dust or fumes are created



Head protection must be worn when receiving/dispatching fluoride deliveries

POTENTIAL HAZARDS AND RISKS

Chemicals

Exposure to hazardous chemicals, avoid skin contact
Exposure to toxic fumes

Slip, Trips, Falls

Slip, trip, fall due to uneven or slippery work surfaces

Manual Task Injury

Manual task injury from incorrect manual handling techniques

Other

Injury due to plant malfunction or misuse

PRE-OPERATIONAL SAFETY CHECKS

✓ **WARNING: Sodium Fluoride is a hazardous substance as it is toxic and a dangerous good. Before carrying out the following procedure the workers are to be familiar with the relevant SDS and follow all safety precautions listed on the SDS prior to handling the chemical**

- ✓ Complete site-specific risk assessment
- ✓ Ensure all staff are familiar with plant operations and controls
- ✓ Ensure that guards are fitted, secured and functional in accordance with manufacturers guidelines
- ✓ Induct technical staff and ensure they have completed the Risk Assessment Checklist for Fluoridation Plant Mech/Elec Servicing Works prior to commencing works
- ✓ Allow only WTP trainees, DPI WTP training groups or Student Engineers to enter the fluoride plant room and only after they have completed a thorough site-specific induction and all are to be accompanied by a qualified fluoridation plant operator
- ✓ Entry door to be kept locked when workers are not in room
- ✓ Only qualified Fluoridation Plant Operators to carry out the following plant procedures:

1. DAILY OPERATIONS (Start)

- ✓ Complete visual plant check prior to operations
- ✓ Note the current stock level within the saturator tank as indicated on the side of the tank.
- ✓ Note the current dosed chemical pump flow meter totaliser reading

- ✓ The operator should then determine whether the saturator tank needs to be topped up, taking into account the predicted daily usage rate and the current tank capacity.
- ✓ Check water softener for adequate salt content. Salt should be visible above water line.
- ✓ Check water softener display, if flashing HOLD in reset button which is indicated by circular arrows.

2. LOADING THE FLUORIDE SATURATOR TANK PROCEDURE

- ✓ Keep entry door closed during loading process
- ✓ Operate equipment as per manufacturer's recommendations
- ✓ Don all PPE as required above
- ✓ Place fluoride bag into black poly tray to prevent spillage.
- ✓ Slice the end of the bag open with the provided cutting tool to allow vacuum nozzle to be inserted into the bag.
Switch transfer vacuum to 'on' via control panel
- ✓ Once vacuum transfer system has completely emptied bag, use vacuum nozzle to collect any spilt material within the black poly bucket. Then turn control switch to 'off'. Replace vacuum nozzle into holder.
- ✓ Remove the empty bag and stow in Hazibag
- ✓ Repeat the above steps until the desired capacity is reached (saturator stock level is above the required level indicator)
- ✓ Use vacuum stored in fluoride dosing room to clean any dry chemical spilt outside of poly bucket.
- ✓ Proceed to "Daily Operations (finish)"

3. FLUORIDE SPILL PROCEDURE

- ✓ On discovery of spilt bags or a major fluoride spill, evacuate the affected area
- ✓ Once worker has donned all required PPE as above, attempt to reseal bag with tape for storage, otherwise empty into saturator tank as per "Loading the fluoride saturator tank procedure" above. Split bags should be used first on next tank fill
- ✓ Use the plant vacuum with HEPA filter installed to suck fluoride dust up. Vacuumed contents can then be emptied into Hazibag and sealed
- ✓ If supernatant lagoon is being returned to filtration process, turn off supernatant lagoon and open inlet to chemical cleaning lagoon. If supernatant is discharged to Bendeela pondage, then fluoride discharge to supernatant lagoon is acceptable.
- ✓ Open locked gate valve (adjacent to entry door outside of fluoride room) and hose down area to appropriate drain.
- ✓ Re-lock gate valve once cleaning process is complete.
- ✓ Reinstate lagoon valve orientation to pre-cleaning arrangement.
- ✓ Proceed to "Daily Operations (finish)"

4. FLUORIDE DELIVERIES

- ✓ Organise storage rack at WTP before fluoride delivery
- ✓ On pick-up from chemical supplier, visually inspect the bags for split and/or exposed fluoride powder. If fluoride powder is detected notify supplier and follow their "Fluoride Spill Procedure"
- ✓ Check delivery docket against new chemicals received and sign off for supplier
- ✓ Move bags individually from supplied pallet to work vehicle tray and arrange to ensure minimal movement during transport.
- ✓ Once at Bendeela WTP, transfer bags individually using correct manual handling techniques to fluoride room storage area.
- ✓ Repeat until all delivered fluoride is stacked neatly in fluoride storage room
- ✓ Record amount of chemical received to WTP and enter into the
 - "Bendeela Fluoride Log" worksheet
 - "Bendeela Chemicals" worksheet in the
 - "Bendeela Flows & Stocks" workbook
- ✓ Clean any spilt chemical by following the above "Fluoride Spill" procedure
- ✓ Proceed to "Daily Operations (finish)"

5. DAILY OPERATIONS (Finish)

- ✓ Ensure to hose down, clean and dry all PPE with ROAR or similar, dispose of any wipes and disposable overalls into Hazibag and seal bag
- ✓ Stow apron and gloves in Fluoride plant room
- ✓ Stow P3 respirator and gumboots in personal locker
- ✓ Ensure to change P3 cartridges every 13 weeks (3 months)

- ✓ Organise with Waste Services to arrange for a direct burial of the Hazibags at the West Nowra garbage tip when the bins are full
- ✓ Thoroughly wash hands and face
- ✓ Record dosed chemical volume from dosing pump, fluoride weight added to saturator tank, delivered chemical weight and/or any faults/incidents to the WTP daily diary
- ✓ Record the chemical weight added to tank in the "added since last reading" column (Fluoride Log sheet), as well as completing the "Kg's added to Tank" column (Chemical Stock Log Sheet), "Kg's Delivered" (Chemical Log Sheet) in the "Bendeela Flows and Stocks" workbook. At the end of each week the total kg's of Fluoride used is recorded in the Fluoride section of the "Bendeela Flows and Stocks" workbook
- ✓ Carry out the Fluoride testing as per SOP026 – "Water Treatment Quality Testing Procedure"
- ✓ Test results to be entered into "Bendeela Flows & Stocks – WTP Fluoride Log" workbook as well as the "Bendeela Worksheet" in the "Plant Log Sheets" workbook
- ✓ Operator is then to determine whether the dose rate needs to be adjusted, depending on the recent daily trending of the fluoride ppm and preferably operating between 0.95 to 1.05ppm

NOTE: Carry out all routine maintenance in accordance with plant's maintenance schedule

DO NOT

- ✗ Do not use if plant is faulty. Attach an Out of Service tag and report fault to your supervisor
- ✗ Do not breathe Sodium Fluoride dust (use respirator)
- ✗ Do not allow the public to tour the fluoride plant room
- ✗ Do not allow any contaminated clothing to leave the site
- ✗ Do not eat, drink or smoke in or around fluoride
- ✗ Do not use mobile phone while operating plant
- ✗ Do not use contact lenses in fluoride plant room

***Plant in this SWI refers to any machinery, equipment, appliance, container, implement and tool.**