October 22, 2013

Summary of the Plan for the Clean-up and Decontamination of the Tritium Fill Room at Shield Source Incorporated

Prepared by RadSafe Canada Ltd for SSI

Shield Source Incorporated (SSI) is in the process of winding down operations at its only location at 925 Airport Road, Unit 221C, Cavan Monaghan, Ontario. SSI has been in close contact with Canadian Nuclear Safety Commission (CNSC) Staff throughout the process of planning for final operations and decontamination activities under its licence. On 2013 July 25, SSI received a request from CNSC staff for a clean-up and decontamination plan for part of its facility – the Tritium Fill Room (TFR). The letter expressed CNSC Staff’s expectation that the TFR cleanup and decontamination activities would be completed by 2013 October 31st.

SSI immediately accelerated its plans for clean-up and decontamination of the TFR and, after a careful evaluation process, selected RadSafe Canada Limited as a third party contractor to assist in the planning and execution of the work. RadSafe is a Canadian supplier of radiation protection services based in Pembroke, Ontario. RadSafe has extensive experience in clean-up and decontamination activities of this type and was able to deploy staff with over 75 years of collective experience in tritium radiation protection to the planning of this work. SSI and RadSafe personnel have worked hand-in-hand to develop a plan for the clean-up and decontamination of the TFR. CNSC approval to proceed was received on 2013 October 18 and work by SSI and RadSafe personnel will commence later this week.

Planning by SSI and RadSafe personnel involved a careful determination of the tritium inventories associated with the equipment in the TFR, an assessment of the potential radiological hazards associated with dismantling the equipment and the identification of the key strategies and controls to ensure that all potential hazards will be effectively mitigated. Key considerations in developing the approach to the work were:

- Protection of the public and the environment by ensuring that tritium emissions are maintained ALARA and far below the licence limits;
- Protection of the personnel performing the work through the optimal use of controls such as confinement, isolation of systems, continuous workplace air monitoring, personnel protective equipment and careful monitoring of the effectiveness of controls by frequent bioassay sampling; and
- Protection of the facility from contamination spread by ensuring a systematic process of dismantling equipment and packaging it immediately in sealed containers for safe shipment for disposal at Chalk River.

The work will be conducted in accordance with SSI’s CNSC licence and radiation safety program and with documents submitted to the CNSC detailing the implementation of the controls described above and special administrative limits to be applied during the work to ensure that the plan is being implemented effectively.
The scope of work addressed by SSIs clean-up and decontamination plan includes the removal of the Tritium Fill Machines in the TFR and, therefore, the remaining inventory of tritium at the facility not already in consumer devices. It also involves the removal of all of the other equipment in the TFR. At the end of the execution of the plan, SSI will no longer have the equipment on-site to produce gaseous tritium light sources. The plan exceeds the requirements of the CNSC letter of July 25 to clean up the Tritium Fill Room. It also addresses the shut down and removal of the active ventilation system and stack. In addition to the planning and assessment activities that have already occurred, the main phases of the work will be:

- **Clean-up and decontaminate the TRF by 2013 October 31 including:**
  - Dismantling and packaging the tritium fill machines;
  - Clean-up and decontamination of all other room contents – cleared to the structural walls (with surface mounted services), bare concrete floors and existing ceiling;
  - Dismantling and removal of the contaminated active duct system within the room back to the main trunk connecting the other areas of the facility to the stack; and
  - Preparation and packaging of all waste for disposal by SSI.

- **Time to allow CNSC verification activities and monitoring by SSI personnel.**

- **Active duct and stack removal by 2013 November 30.**

- **Final reporting on the activities conducted and radiological results soon after the completion of work.**

SSI will require a safe and conservative approach to work in all phases and has committed to stop work and report to CNSC staff in the event of unanticipated radiological conditions or issues.

Clean-up and decontamination of the equipment in the TFR and the active duct and stack system will be performed primarily by Radsafe personnel with SSI and Radsafe personnel continuously monitoring the progress of the work and radiological conditions. It is anticipated that CNSC staff will be present for much of the work and that verification activities by CNSC staff will continue after the work is complete.

The active duct and stack system will be removed. SSI has engaged experienced contractors to augment its radiation safety team in developing plans to carry out this work in a safe and compliant manner, with careful consideration of safety of the public and environment and of the personnel carrying out the work. SSI has had extensive communications with CNSC staff to ensure that the work will meet regulatory expectations. The work will be extensively monitored throughout to ensure that conditions are as expected and that the controls employed are effective. Work is expected to be completed by November 30th, with clean-up and decontamination of the TFR completed by October 31st.