INTRODUCTION

This information bulletin intended for crematorium staff and funeral directors was prepared by the Radiation Protection Branch to outline the radiation safety precautions concerning the handling and disposal of the remains of a deceased person who had received medical treatment with radioactive strontium-89 (Sr-89) shortly prior to death.

PROPERTIES AND USE OF RADIOACTIVE SR-89

Metastron (strontium-89 chloride) is used to relieve bone pain in patients suffering from cancer metastases in the bones. Sr-89 is a radioactive substance which decays to half its original activity in 50 days. The type of radiation emitted from Sr-89 can be totally shielded by a small thickness of material such as plastic or wood. Because the radiation is not very penetrating it cannot be detected outside the body. However, if the patient dies soon after treatment with Sr-89 a significant amount will remain in the bones. Consequently if the body is cremated, the remains will be radioactive.

The Radiation Protection Branch has conducted an assessment of the possible risks to crematorium staff handling the remains from a body that contained residues of Sr-89. The assessment indicated that any radiation exposure to staff involved in cremation operations will be extremely small compared to natural background exposures, and will not constitute any significant risk to the health of any individual, provided that staff involved in the handling of remains comply with basic hygiene practices, and use basic safety apparel and equipment outlined in this notice. Nevertheless crematorium directors need to be aware of their responsibility to provide appropriate instructions to crematorium staff on safety precautions and procedures on cremation processing of the body and the subsequent handling and disposal of the remains.

1. ATTENTION: FUNERAL DIRECTORS
   SAFETY CONSIDERATIONS PRIOR TO CREMATION

Funeral directors should be vigilant in checking that the specific question on the Application Form for Cremation ‘Does the body contain a cardiac pacemaker, cardiovascular defibrillator, drug infusion pump or similar device, or radioactive injectable solutions?’ has been accurately completed by the general practitioner, in consultation with the family of the deceased. If the deceased had been injected with Sr-89, the deceased's general practitioner or medical specialist should be contacted to confirm the date of treatment given, and the Radiation Protection Branch could be contacted for advice.
2. **ATTENTION: CREMATORIUM STAFF
SAFETY PROCEDURES ON THE CREMATION PROCESSING AND HANDLING OF REMAINS**

Crematorium staff should be instructed on the following safety precautions and procedures:

(i) The person raking out the furnace should:

- Wear a full-face visor and a dust mask
- Wear a disposable overall and, after use, remove by turning inside out to minimise spread of any dust.
- Wear disposable gloves, also turning inside out after use, and wash the hands well after removal of gloves.

(ii) The furnace should be very thoroughly raked out so as to minimise cross contamination of remains. If practicable, the cremation should be the last of the day, and the furnace should be allowed to cool overnight and be cleaned out by a vacuum cleaner.

(iii) Any ashes spilt around the furnace hearth should be cleaned up with a vacuum cleaner.

(iv) Any equipment or devices used for the cremation processing should be cleaned out afterwards. Any cleaning materials and any removable bag from the vacuum cleaner should be handled with care and disposed of.

(v) Since the granulating process of the cremated remains may generate dust, the remains should be left ‘ungranulated’ and stored in an appropriately labelled storage container with a thickness of approximately 2 cm particle-board.

(vi) The remains should be buried soon after cremation. However, if scattering or dispersal of the ashes is proposed by the deceased’s family, the remains should be stored for a period of time (approximately 12 months from the date of the strontium administration) when the radioactive strontium has decayed to an acceptable level. Early release or disposal of the ashes must be approved by the Radiation Protection Branch.
SOURCES OF INFORMATION

1. Guidelines on ‘Instructions for Crematorium Staff on the Processing of Cremation Ashes following Strontium-89 Treatment’ - Mary G Aerts at Radiation Health Section, Health Department of Western Australia [E-mail: radiation.health@health.wa.gov.au]

2. ‘Cremation of Corpses containing Bone-seeking Radionuclides following Medical Treatment’ - Mary G Aerts, Radiation Health Section, Health Department of Western Australia [E-mail: radiation.health@health.wa.gov.au]


FOR ANY FURTHER INFORMATION OR ENQUIRIES, CONTACT THE RADIATION PROTECTION BRANCH OF THE EPA ON TELEPHONE NUMBER 08 8463 7826.
MONITORING OF CREMATED ASHES

Name of Crematorium: ________________________________

Contact Person: ______________________________________

Description of Container of ashes: _______________________

_________________________________________________________________

Date when strontium (Sr-90) was administered: ______

Date when radiation measurement was conducted: ______

<table>
<thead>
<tr>
<th>Survey meter used:</th>
<th>(µSv/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background</td>
<td></td>
</tr>
<tr>
<td>Near surface of container (unopened)</td>
<td></td>
</tr>
<tr>
<td>1m distance from container (unopened)</td>
<td></td>
</tr>
<tr>
<td>Near surface of container (lid opened)</td>
<td>γ, β</td>
</tr>
</tbody>
</table>

Could the ashes be returned to family/disposed of via scattering?:  YES             NO

COMMENTS:_____________________________________________________

Name of Radiation Protection Branch Officer:_______________________________

Signature:_________________________   Date:__________

(Note: The radioactive strontium would have decayed to an acceptable level when the cremated ashes have been stored for an approximate 12-month period from the date of the strontium administration.)