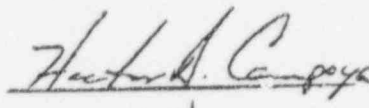

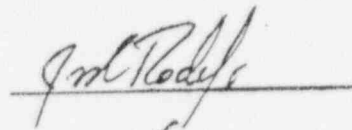
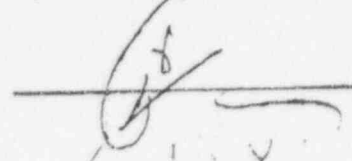
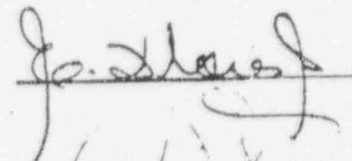
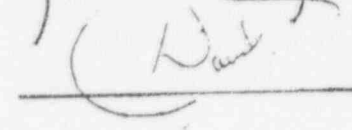
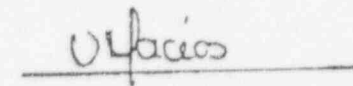


Seatt de México  
Sistemas y procedimientos de Operación

Depto: Ingeniería  
Título: Procedimiento de contaminación y descontaminación  
No.: ING-019

Revisión: F  
Fecha: Mayo 13, 1996  
Condiciones de uso: General

AUTORIZACIONES

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REFERENCIA

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For making the surfaces contamination tests, the radiological security responsible who is the one must coordinate the actions should follow these steps:

- a) Connect the Eberline Alphas Counter to alternate current of 110 v.
- b) Turn on the counter in the back part of the machine placing the switch power "on".
- c) Place the front interrupters in:
  - \*Count mode.....timed
  - \*X.1
  - \*X.1 Minute
- d) Press the red button start-reset and read the counter's face beside, which should be zero, but in opposite case do the following:
  - \* Humidify a towel totally with alcohol and clean the counting base.
  - \* Verify counting again.
  - \* Repeat last procedure in case it doesn't show zero.
  - \* If continues marking, proceed with the radiocontamination remover liquid with a towel and clean again the counting base.
- e) Fill information of the area that will be revised in the cloth disks face.
- f) Humidify cloth disks in alcohol.
- g) Pass the cloth disks by the surface that will be *revised*, The right surface for the contamination revision is 100 cm<sup>2</sup> of each surface so it must be marked 100 cm<sup>2</sup> zones.
- h) Remove the cloth disk and place it on the counting base, then introduce it into the Counter. The cloth disks should be changed to areas under counting for their measurement.
- i) Press the red button start-reset and read the counter face, counting, write the reading on the cloth disk's cover.
- j) If the reading is zero, or very close to zero, repeat it two more times.
- k) In case that the counting be more than 185 counts or DPM, legally it should proceed to its decontamination, but even if the counting is 20 or more counts the decontamination will be done following the right procedure which is described in this document. If the radioactive contamination is more than 4.0 Bq / cm<sup>2</sup> (0.00001 uCi/cm<sup>2</sup>) for emissors beta and gamma and for low toxicity alpha emissors, or 0.4 Bq/cm<sup>2</sup> (0.00001 uCi/cm<sup>2</sup>) for the rest of alpha emissors do the decontamination must be as soon as possible.
- l) In case of high contamination, it should be notified immediately to the Nuclear safety and security national commission to determine the steps to follow.
- m) In case that the counting is minimum, follow this procedure. Write the readings on the contamination test register book, which is in the clean room.
- n) Remove the cloth disk from the machine and place it on its cover. Keep it in its box (the box where supplier sends them) for any verification and keep it in the big box for frotis.

**Decontamination Procedure:**

Decontamination is the contamination elimination of some surfaces and it doesn't destroy the radioactive pollution but only changes its location y/o alters its chemical form.

The decontamination methods are physical and chemical between the first ones the cleaning is by vacuum, wet or dry remission by abrasives or brushes for steam action. Between the chemicals it is included the use of acids, humectant agents, alcalis, ion change, etc.

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A good decontaminant solution should have:

- a) A fast humectant power and complete to continue covering completely the surface.
- b) Absorption capacity to assure a complete ion change.
- c) Action respecting the contaminant to prevent the redeposition of active ions on the surface to be cleaned.

The following principles are applied to any decontamination procedure:

- a) The wet decontamination methods should be rather from the dry methods.
- b) The soft decontamination methods should be tried before the frequent treatments, which can damage the surface.
- c) Caution should always be taken to prevent the contamination which can be divided into four categories:
  - \* Personal
  - \* Clothing
  - \* Equipment
  - \* Areas.

Surface decontamination:

The surface contamination is more often presented in Seatt de Mexico, S.A. de C.V., so there must be always right materials in existence to decontaminate, which are:

- \* Highly absorbent towels.
- \* Radiocontamination remover liquid (radiacwash with EDTA)
- \* Sprinklers for the remover liquid and water.

And butyl gloves should be used to avoid hand contamination at the moment of decontamination.

The decontaminating surfaces are the containers used for the radioactive source handling in the plant, the work tables, the dispositives and assembly equipment and in the clean room floor. In case it is necessary the vehicle and the containers must be decontaminated when they have presented contamination symptoms; and all those areas that have had contact with radioactive material.

To decontaminate the surfaces explained in the last paragraph, the radiological security responsible who should continue coordinating the actions must follow the next steps:

- a) Verify that the Frotis test has been done before and that it had detected a radiation level.
- b) Use personal protection equipment as the smock, shoes cover, butyl gloves, mouth covers, mask. The gloves must be set with a fold to remove them easily and it must be 1cm aprox.
- c) Remove every obstacle that prevents the complete decontamination.
- d) If the area to be decontaminated is big, mark 70 x 70 cm squares with metric rule, on all the surface putting tape.
- e) Put the remover liquid in the sprinkler and put clean water in another one.
- f) Sprinkle the surface that will be decontaminated with the liquid.
- g) With a towel, take the remover liquid from the surface with circular movements, use the necessary towels.
- h) Sprinkle the surface with clean water
- i) Remove the water from the surface with a towel use the necessary towels.
- j) Put the towels with remover in a box so they can be disposed correctly in the solid waste room to be sent to USA later.
- k) Continue with other surface.

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- 1) All the surfaces identified as contaminated will be monitored to verify that the contamination disappeared. In opposite case, the last procedure should be done again until it disappears.

To prevent the contamination determination is needed during the decontamination process, taking on mind the following:

- 1) Work from the extremes towards the center of the contaminated area or from the top to the vertical objects.
- 2) Prevent the contamination to other areas, which implies a complete knowledge of where the contamination is and the use of protection clothing specially the shoes covers.
- 3) Concientize that all the equipment used in cleaning and liquids used are potentially contaminated, so they have to be handled so.

It is important to know how to decontaminate surfaces having different importance about contamination quantity so the interested persons know the procedure even that would never be presented in the Plant Seatt de Mexico. We could add the following:

- \* The decontamination measurements to take depend from the kind of contamination.
- \* For the lose contamination special decontamination machines can be used as vacuums with special filters.
- \* It is recommendable the use of wet hyssops with decontaminating liquids.
- \* Avoid brushing, or move dust because this could be dangerous.
- \* Where there is a lot of lose contamination, it is recommendable to apply carefully enamel to the contaminated surface which once it is dry, can be removed with the contamination , washing after that the contaminated area.
- \* As preventive measurement, the personnel in charge of the contamination elimination should use completely protection clothes.
- \* for the fixing contamination wet methods should be applied as using decontaminating liquids, detergents to eliminate the lose contamination.
- \* Remnant contamination should be removed by washing with agents to avoid the contaminants redeposition.
- \* Allow the decontaminant liquids to be in contact with the contaminated surface the most possible time with the purpose that the chemical reactions can help the decontamination. If the last procedure fails, abrasive creams or materials will have to be used.
- \* If the contamination persists, it will be necessary to remove the surface where the fix contamination is or use the sealing method, applying paint, plastic, asphalt, etc. According to the surface to cover.