

Apr. 23, 2003

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PROCEDURE COVER SHEET

PPL SUSQUEHANNA, LLC	NUCLEAR DEPARTMENT PROCEDURE	
ENVIRONMENTAL SAMPLE DIRECTOR Emergency Plan Position-Specific Instruction		EP-PS-248 Revision 1 Page 1 of 3
<u>QUALITY CLASSIFICATION:</u> () QA Program (X) Non-QA Program		<u>APPROVAL CLASSIFICATION:</u> () Plant () Non-Plant (X) Instruction
EFFECTIVE DATE: <u>4-22-2003</u> PERIODIC REVIEW FREQUENCY: <u>Three Years</u> PERIODIC REVIEW DUE DATE: <u>4-22-2006</u>		
<u>RECOMMENDED REVIEWS:</u> ALL		
Procedure Owner: <u>Nuclear Emergency Planning</u> Responsible Supervisor: <u>Primary Dose Assessment Supervisor</u> Responsible FUM: <u>Supv.-Nuclear Emergency Planning</u> Responsible Approver: <u>Primary Recovery Manager</u>		

ENVIRONMENTAL SAMPLING DIRECTOR: Emergency-Plan-Position-Specific Instruction

WHEN: Activation of the Emergency Operations Facility

HOW NOTIFIED: Paged/Telephone

REPORT TO: Dose Assessment Supervisor

WHERE TO REPORT: Emergency Operations Facility

OVERALL DUTY:

Direct emergency environmental field monitoring efforts to determine the significance of airborne and liquid releases.

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REFERENCES:	

SSSES Emergency Plan

National Interim Primary Drinking Water Regulations, EPA 570/9-76-003

Commonwealth of Pennsylvania State Emergency Plan, Appendix 6, Annex E

NUREG 0654, Planning Standards and Evaluation Criteria

NUREG 0731, Guidelines for Utility Management Structure and Technical Resources

NUREG 0696, Functional Criteria for Emergency Response Facilities

MAJOR TASK:

Monitoring of affected sectors following an airborne release.

SPECIFIC TASKS:

HOW:

- | | |
|---|---|
| <p>1. Determine those affected sector locations for which MIDAS has projected contamination/deposition levels below 5E-4mR/hr.</p> | <p>1a. Affected sectors are those identified by MIDAS as being in the plume path and/or those that have been determined by radiological monitoring in the field to have been exposed to the plume.</p> <p>1b. At each monitoring location, evaluate, through consultation with the DAST, the consistency of results from radiological monitoring in the field with MIDAS contamination/deposition level projections</p> <p>1c. TLD and PIC data retrieval and milk sampling may be performed without radiological monitoring at deposition levels below 5E-4mR/hr.</p> <p>1d. If contamination/deposition levels projected by MIDAS are not below 4.5E-2 $\mu\text{Ci}/\text{m}^2$, no emergency environmental sampling may be performed in the affected sector without simultaneous radiological monitoring.</p> |
| <p>2. Check the locations on clean copies of TAB 2, titled "Environmental Monitoring Locations", in the affected sectors at which each team is to retrieve the following:</p> <p style="margin-left: 40px;">* TLDs,
* milk samples</p> | <p>2a. Consult any other annotated copies of TAB 2 that may have been made for teams previously dispatched to ensure that there is no duplication of effort.</p> <p>2b. Copy the annotated TAB(s) 2 for distribution to the team(s).</p> |
| <p>3. Assemble a team of two from available sampling personnel if deposition levels permit retrieval of the items listed in Task #2 of this TAB in the affected sector without radiological monitoring.</p> | <p>3a. Provide the team with the annotated copy of TAB 2 that was compiled in Specific Task #2 of this TAB.</p> <p>3b. Ensure team members sign in on RWP #8002 for field team activities.</p> |

SPECIFIC TASKS:

HOW:

4. Decide with the team the order in which the monitoring locations will be visited and the desired route to travel.

4a. Have the team number the locations on TAB 2 in the order that they will be visited. Numbering should begin where the numbers left off for the previously dispatched team. Consult the annotated TAB 2 for the previously dispatched team.

4b. Ensure that this annotated copy of TAB 2 is labeled with the team's designation.

4c. Have the team copy TAB 2 after all annotations have been made. The team should keep the original copy of the annotated TAB and provide the ESD with the copy. The copy should be referenced when deciding future team monitoring assignments.

4d. Obtain an estimate from the team of the time necessary to complete their mission.

5. Provide the appropriate replacement emergency environmental monitoring TLDs to the team.

5a. Have the team verify that they have the replacement TLDs for all the monitoring locations that they will be visiting. Instruct them to ensure that they do not retain any replacement TLDs for locations that they will not be visiting.

NOTE:

TLDs are stored in the EOF Supply Room.

6. Direct the team to perform their pre-dispatch preparations.

6a. The team will inventory the contents of their environmental sampling kit, replace missing or faulty items, and determine that their vehicle is fully operable, including the VHF radio.

SPECIFIC TASKS:

HOW:

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- | | |
|---|--|
| <p>7. Enter the following on the "Emergency Environmental Sampling" and "TLD" logs:</p> <p style="padding-left: 40px;">team(s) sample numbers, sample types, and location codes.</p> <p>8. Dispatch the team upon being informed that monitoring preparations have been completed.</p> <p>9. Direct the team to report back by radio every 15 minutes with their position and SRD readings.</p> | <p>6b. The sampling team must ensure that they procure the necessary additional items from EOF supplies that are identified in the applicable sampling procedures as being needed but not contained in their emergency kit.</p> <p>6c. The team must dress in the required jumpsuits and boots prior to dispatch. Gloves may be put on in the field prior to exiting the vehicle.</p> <p>NOTE:
These dress requirements may exceed those listed on RWP #8002 but are recommended prudent measures.</p> <p>6d. The team will inform the ESD by radio from their vehicle when they have completed these preparations.</p> <p>7a. The sample numbers are the numbers written on TAB 2 representing the order in which the monitoring locations are visited.</p> <p>NOTE:
If a decision is made to collect additional samples, letters a through z may be used following the whole numbered integer to identify samples and their order of collection.</p> |
|---|--|

SPECIFIC TASKS:

HOW:

- | | |
|--|---|
| 10. Notify the DAST promptly if YTD exposure plus current SRD readings are within 200 mr of a team member's applicable dose extension. | |
| 11. Consult with the DASU/DAST to determine if there are any additional sampling needs. | <p>11a. Consider collecting air samples, soil, pasture grass, milk, surface/drinking water, snow, and/or fruits and vegetables.</p> <p>11b. If radioactive Iodine-131 is known or suspected to have been released, milk sampling should be repeated at subsequent milkings to determine the peak concentrations of Iodine-131. After concentrations begin to decline, consideration may be given to suspending or reducing the frequency of sampling.</p> <p>11c. If precipitation occurred during or soon after the release, consideration should be given to repetitive sampling of surface/drinking water to observe any buildup from atmospheric washout and subsequent runoff.</p> |
| 12. Determine those affected sector locations for which MIDAS has predicted contamination/deposition levels between 5E-4mR/hr and 5E-3mR/hr. | <p>12a. At each monitoring location, evaluate, through consultation with the DAST, the consistency of results from radiological monitoring in the field with MIDAS contamination/deposition level projections.</p> <p>12b. No emergency environmental sampling will be done at locations with contamination levels at or above 5E-3mR/hr without special direction from the DASU/DAST.</p> |
| 13. Assemble new unified environmental monitoring teams. | <p>13a. Environmental monitoring teams will consist of one radiological monitoring person and one environmental sampling person.</p> |

SPECIFIC TASKS:

HOW:

14. Request that the DAST brief the team on radiological conditions in the field.
15. Request the highest frisker reading (cpm) at each monitoring location when contacted by a team.
16. Request the highest count rate(s) on contact with the bagged sample(s).
17. Direct the team(s) to proceed to the county's nearest operable decontamination facility upon completion of samplings.

13b. Repeat Steps 2, 3a, 3b, 4, 7, 8, and 9 of this TAB for each team.

13c. Instruct each team to notify the ESD upon arrival at each location to be monitored.

15a. Record this information on the Emergency Environmental Sampling Log.

16a. Record this information on the Emergency Environmental Sampling Log.

HELP

**County Decontamination
Facility Locations
See TAB 3**

17a. Instruct the teams to check themselves and their equipment for contamination, inform the ESD of any contamination found, and await decontamination assistance from site Health Physics or other individuals with the appropriate background.

17b. At least one team member will remain at the county decontamination facility with the samples until the appropriate person, such as the Administrative Coordinator - SSES Environmental Laboratory and the Effluents Technology person arrive to prepare samples for transport to analytical offsite lab.

SPECIFIC TASKS:

HOW:

18. Direct the team to deliver their samples to the Administrative Coordinator, SSES Environmental Laboratory, if present, at the county decontamination facility.

17c. If no county decontamination facilities are operable, direct the team to a location, determined in consultation with the DAST/DASU, to be checked for contamination and decontaminated if necessary.

18a. The Administrative Coordinator, SSES Environmental Laboratory, is responsible for completion of required paperwork and other sample preparation for transport to the offsite analytical lab.

18b. If the Administrative Coordinator, SSES Environmental Laboratory, is not available, sampling personnel will be responsible for completing the paperwork and sample preparation required for transport to the offsite analytical lab.

MAJOR TASK:

Monitoring of non-affected sectors following an airborne release.

SPECIFIC TASKS:

HOW:

1. Determine from the EOF Administrative Assistant the number of emergency vehicles available and their status.

- 1a. If it appears that additional emergency vehicles might be needed, determine if the SSES Environmental Laboratory is in an affected sector. **Affected** sectors are those identified by MIDAS as being in the plume path, and or those that have been determined by radiological monitoring in the field to have been exposed to the plume. Consult with the DAST to determine if any sectors have been determined to be affected that were not so identified by MIDAS.
- 1b. If the Lab is not in an affected sector and can be reached practically without traversing an affected sector, environmental sampling personnel may be dispatched immediately upon arrival at the EOF to retrieve any needed vehicles(s).
- 1c. If affected sectors must be traversed to reach the Lab, consult with the DAST to determine if it is desirable for sampling personnel to retrieve any vehicle(s). Sampling personnel may require protective clothing and assistance from radiological monitoring team personnel in order to attempt vehicle retrieval.

NOTE:

Ensure team members sign in on RWP #8002 if affected sectors are to be entered.

- 1d. If vehicle can not be retrieved, request the Administrative Assistant to provide additional vehicles.

SPECIFIC TASKS:

HOW:

2. Locate the replacements for the emergency environmental TLDs in the field.

2a. Replacement TLDs are stored in the EOF Supply Room.

3. Make two copies of Tab 2, titled Environmental Monitoring Locations.

HELP

**Environmental Sampling Locations
See TAB 2**

4. Determine the types of monitoring, if any, that should be performed in addition to the following: recovery of TLDs, PIC data, air particulate filters and charcoal cartridges, and milk.

4a. If precipitation was falling during the release or soon afterwards, consider sampling precipitation.

HELP

**SES Environmental Sampling
Strategy
See TAB 6**

5. Determine the monitoring locations to be visited in the non-affected sector(s).

5a. Non-affected sector(s) are those that were not projected by MIDAS to have been in the plume path.

5b. Identify by a line through the location code in the copy of TAB 2, titled "Environmental Monitoring Locations", the emergency TLD(s), and air and milk sampling location(s) in the sector(s) affected by the release(s).

These locations will not be visited by non-affected sector monitoring teams.

5c. Copy the annotated TAB 2 for distribution to the non-affected sector monitoring team(s).

6. Assemble a team of two from the sampling personnel who report first.

6a. Provide the team with the annotated copy of TAB 2 that was compiled in specific task #5 of this TAB.

SPECIFIC TASKS:

HOW:

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- | | |
|---|--|
| 7. Instruct the team that it should not enter an affected sector and should not visit any TLD, air and milk sampling location(s) for which location codes are lined out on the annotated TAB 2. | 7a. Refer the team to the EPZ map to ensure that it understands the area(s) that must be avoided. |
| 8. Determine in consultation with the team if they can practically attend to all of the non-affected monitoring locations, including the PICs without assistance. | 8a. Sites that can't be visited during daylight hours by the team because of time limitations will be visited by the team the next day, between dawn and dusk, or by another team if it is essential to reach them quickly.

8b. Line out all location codes on TAB 2 that the team will not visit that are not already lined out. |
| 9. Decide with the team the order in which the monitoring locations will be visited and the desired route to travel. | 9a. Consider visiting locations closest to the affected sector(s) last. Have the team number the locations on TAB 2 in the order that they will be visited. (These numbers will become sample numbers.) Ensure that this annotated copy of TAB 2 is labeled with the team's designation.

9b. Have the team copy TAB 2 after all annotations have been made. The team should keep the original copy of the annotated TAB and provide the ESD with the copy. The copy should be referenced when deciding future team monitoring assignments.

9c. Obtain an estimate from the team of the time necessary to complete their mission. |

SPECIFIC TASKS:

HOW:

10. Have the team verify that they have the replacement TLDs for all the monitoring locations that they will be visiting. Instruct them to ensure that they do not retain any replacement TLDs for locations that they will not be visiting.

11. Direct the team to perform their pre-dispatch preparations and to inform the ESD by radio from their vehicle when they have completed these preparations.

11a. If seal is broken, the team will inventory the contents of their environmental sampling kit. Replace missing or faulty items, if necessary, and determine that their vehicle is fully operable, including the VHF radio and cell telephone

11b. The sampling team must ensure that they procure the necessary additional items from EOF supplies that are identified in the applicable sampling procedures as being needed but not contained in their emergency kit.

11c. The team must dress in the required jumpsuits and boots prior to dispatch. Gloves may be put on in the field prior to exiting the vehicle.

12. Enter the following on the "Emergency Environmental Sample" and "TLD" logs:

1. team(s) sample numbers
2. sample types
3. location codes

12a. The sample numbers are the numbers written on TAB 2 representing the order in which the monitoring locations are visited.

HELP

**Emergency Environmental Monitoring
 Records
 See TAB 4**

13. Dispatch the team upon being informed that monitoring preparations have been completed.

13a. Direct the team to report back by radio immediately if any accumulated dose is indicated by their SRDs or PADs.

SPECIFIC TASKS:

HOW:

- | | |
|--|--|
| 14. Direct the team to a location near a county decon facility where it will be met by radiological monitoring team personnel for frisking of personnel and samples if there is any dose received by team members as indicated by SRD's. | 13b. If any dose to the team is indicated by SRDs or PADs, recall the team immediately and inform the DAST that unexpected dose was received by the team in sectors predicted by MIDAS to be non-affected. |
| 15. Direct the team to deliver their samples to the Administrative Coordinator - SSES Environmental Laboratory, if present, at the EOF, if no contamination of samples is found in step 15. | 14a. If contamination is detected, the Rad Monitoring Team will process the sampling personnel through the decon facility and leave the samples at the facility for subsequent disposition. |
| | 15a. The Administrative Coordinator is responsible for completion of required paperwork and other sample preparation for transport to the offsite analytical lab. |
| | 15b. If the Administrative Coordinator is not available, sampling personnel will be responsible for completing the paperwork and sample preparation required for transport to offsite analytical lab. |

MAJOR TASK:

Management of Environmental Sampling Field Teams in monitoring of Unusual liquid releases.

SPECIFIC TASKS:

HOW:

1. Initiate sampling of the Susquehanna River and Danville drinking water supply.

NOTE:

If an airborne release is occurring, do not attempt to sample affected areas of the river to monitor liquid release progress.

If an airborne release occurred previously, determine if the river and Danville Water Authority are in the affected sectors. If in the affected sectors, sampling team(s) may be dispatched if deposition levels in area traversed are below $4.5E^{-2}\mu\text{Ci}/\text{m}^2$.

If deposition levels are between $4.5E^{-2}\mu\text{Ci}/\text{m}^2$ and $4.5E^{-1}\mu\text{Ci}/\text{m}^2$, sampling team personnel must be accompanied by Radiological Monitoring Team personnel.

DO NOT DISPATCH Monitoring Team personnel to traverse areas with deposition at or above $4.5E^{-1}\mu\text{Ci}/\text{m}^2$ without permission from the DASU.

- 1a. Ensure team members sign in on RWP #8002 for field team activities.
- 1b. Sample the river to monitor progress of the release and to determine actual radionuclide levels at Danville Water Authority.

SPECIFIC TASKS:

HOW:

- 1c. If no airborne release is occurring or has occurred, contact the SSES Environmental Laboratory Project Director and request environmental samplers to monitor liquid release.
- 1d. Using the river depth, reference Table 1 in "HELP" Tab to estimate transit time to Danville for leading edge of the release.

HELP

**Liquid Discharge Data Sheets
See TAB 8**

- 1e. Use the arrival time as a guide for dispatch of the sampling team to Danville Water Authority, consulting with the DASU where to sample. (Immediately go to the Water Authority or sample prior to it.)

NOTE:

Time permitting, water may be sampled from one or more of the bridges located downstream of the SSES discharge line but upriver from Danville.

The following approximate transit times for releases to these bridges are expressed as fractions of the travel time to Danville:

- * 1/5 to Berwick
- * 1/3 to Mifflinville
- * 2/3 to East Bloomsburg
- * 3/4 to Catawissa

Determine if sufficient time remains before the trailing edge of the plume passes the monitoring location for obtaining samples.

River water analysis results are not used in liquid release calculations.

SPECIFIC TASKS:

HOW:

HELP

**Environmental Sampling Locations
See TAB 2**

2. Direct samplers to obtain water samples from the Danville Water Authority.

- 2a. Obtain three two gallon grab samples of water from the Radiation Monitor sink drain line, (location 12 H2R), at the following estimated arrival times:
- 1) Leading edge of the release
 - 2) Peak concentration of the release
 - 3) Trailing edge of the release.

NOTE:

If the sample cannot be obtained from the sink drain line, collect one from the alternate location, (Pa. Fish Commission Boat Ramp at Danville), using a boat to sample midstream.

3. Log information on the "Emergency Environmental Monitoring Sample Log" where applicable.

- 3a. Record on the form:
1. Team(s) sample numbers
 2. Sample types
 3. Location codes

NOTE:

The sample numbers will be whole number integers that will be assigned sequentially based on the order in which samples are obtained, beginning with 1 for the first.

HELP

**Emergency Environmental Monitoring
Records
See TAB 4**

SPECIFIC TASKS:**HOW:**

4. Direct samplers to return samples to the Administrative Coordinator at the SSES Environmental Laboratory, (unless an airborne release has occurred or one is imminent).

NOTE:

If an airborne release affecting the Environmental Laboratory is in progress or expected soon, direct the samplers to take samples to the appropriate county decontamination center.

HELP

County Decontamination Facility
Locations
See TAB 3

MAJOR TASK:

Analysis and disposition of emergency environmental Samples.

SPECIFIC TASKS:

HOW:

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|--|--|
| 1. Direct the Administrative Coordinator - SSES Environmental Laboratory to travel to the appropriate county decontamination facility. | 1a. The Administrative Coordinator will perform the following at the decontamination facility: <ul style="list-style-type: none">• receive samples,• package samples for transport to Framatome, Teledyne and/or other offsite radioanalytical laboratory, and• complete the non-DOT required paperwork that must accompany the samples. |
| | 1b. The Administrative Coordinator - SSES Environmental Lab must complete the following: <p style="margin-left: 20px;">Sample Receipt Forms or Sample Collection Sheets,
Records of Sample Transfer,
Sample Packing Lists, and
the Emergency Environmental Sample Transport Log.</p> |
| <hr/> HELP <hr/> Emergency Environmental Monitoring Records
See TAB 4 <hr/> | |
| 2. Request that the DASU arrange for a person from SSES Effluents Technology to travel to the appropriate county decontamination facility. | 2a. The Effluents Technology person will work with the Administrative Coordinator - SSES Environmental Laboratory and/or sampling personnel to prepare samples for transport to the offsite radioanalytical laboratory(s). |
| | 2b. The Effluents Technology person will prepare DOT shipping papers as necessary and ensure that packaging and labeling meet DOT criteria. |

SPECIFIC TASKS:

HOW:

3. Request couriers from the EOF's Administrative Support Manager.

3a. One courier will transport emergency environmental TLDs recovered from the field to PPL's Corporate Dosimetry Laboratory in Allentown from the appropriate county decontamination facility.

3b. Another courier (or multiple couriers) will transport samples from the appropriate county decontamination facility to the offsite radioanalytical laboratory(s) as desired.

3c. Provide all couriers with the necessary directions.

NOTE:

Arrangements may also be made with private carriers to transport the samples to the offsite radio analytical lab. These arrangements may be made by Effluents Technology if radiation levels of the samples warrant their involvement.

4. Notify Framatome, Teledyne and/or other offsite radioanalytical laboratory of the numbers and types of samples that it will be receiving for analysis and their estimated time of arrival. Notify PPL's Corporate Dosimetry Laboratory in Allentown that it will be receiving TLDs for processing and their estimated time of arrival.

4a. Direct offsite radioanalytical lab to fax copies of the following promptly upon receipt to the ESD at PPL's EOF:

Sample Receipt Forms or Sample Collection Field Sheets, APF/CC Collection Field Sheets, and Records of Sample Transfer

4b. Direct offsite radioanalytical lab to fax analysis results as soon as they're available.

5. Direct Framatome, Teledyne or other offsite radioanalytical laboratory to analyze air particulate filters and cartridges by gamma spectroscopy as a minimum.

5a. Request that the radioanalytical laboratory meet the analysis sensitivity (MDC) of 0.07 pCi/m³ for Iodine-131 on the cartridges.

SPECIFIC TASKS:

HOW:

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|--|--|--|
| <p>6. Direct Framatome, Teledyne or other offsite radioanalytical laboratory to analyze water samples to the same sensitivities as required by PPL's contract for the analysis of routine REMP samples, if applicable.</p> <p>7. Direct other offsite radioanalytical laboratories, if applicable to analyze the following media to the sensitivities for the radionuclides listed in TAB 5:</p> <ul style="list-style-type: none"> 1. soil, 2. pasture grass 3. milk <p>8. Inform the Administrative Coordinator - SSES Environmental Laboratory of any special analyses of samples that will be required.</p> <p>9. Enter the desired analysis types on the Emergency Environmental Sampling Log.</p> | <p>5b.</p> <p>5c.</p> <p>6a.</p> <p>8a.</p> <p>9a.</p> | <p>Request that the lab meet a sensitivity of 0.05 pCi/m³ for Cesium-134 on the particulate filters, if possible.</p> <p>Additional analyses of particulate filters, such as gross alpha and beta activity analyses, may be done, depending on the DASU's desires. Consult with the radioanalytical lab on any additional analyses that it might recommend.</p> <p>Although not routinely performed as part of the REMP, radiochemical Iodine-131 analyses of precipitation samples should be considered if radioactive iodine is known or suspected to have been released.</p> <p>Required sample analyses will be recorded on the Sample Collection Field Sheet or APF/CC Collection Field Sheet if being sent to the offsite radioanalytical laboratory.</p> <p>Indicate the analysis types on the log as routine and/or list any special analyses required.</p> |
|--|--|--|

HELP

Sample Analysis Information
See TAB 5

SPECIFIC TASKS:

HOW:

10. Enter the dates and times of sample receipts by the radioanalytical lab on the Emergency Environmental Sampling Log.

10a. Make the lab's sample receipt entries on the Log upon receipt of the faxed Record of Sample Transfer.

10b. Add one day to the radioanalytical lab receipt date and enter the result in the "Analysis Results Due" column of the Emergency Environmental Sampling Log.

11. Enter the date and time that analysis results are received by the ESD from the radioanalytical laboratory in the "Analysis Results Received" column of the log.

12. Review analysis results (Reports of Analysis).

12a. Compare the analysis less-than values to the "Required Sensitivities for Emergency Analyses" of Tab 5. If the less-than values are greater, contact the radioanalytical lab to determine the actions, if any, that may be taken to achieve improved analysis sensitivities for those samples. -

12b. Air particulate filter and charcoal cartridge data are typically for periods longer than the unusual airborne releases.

Gamma spectroscopic analyses of particulate filters for Iodine-131 when the SSES is operating normally typically do not yield positive results. Any positive results obtained for samples collected during an emergency should be multiplied by the ratio of sampling time to release time to obtain a proper appreciation for levels during the period of the unusual release.

SPECIFIC TASKS:

HOW:

If gross beta analyses are performed, the level during the actual release may be appreciated by comparing it to an average background level of 16 pCi/m³. Subtract the background from the reported gross beta activity for the emergency collection, multiply the net gross beta activity by the ratio of the hours of air sample collection to the hours of the release, and add back in the background.

Gross beta activity levels for air average about 16 pCi/m³ annually, but may range from 8 to as much as 40 pCi/m³ for weekly analysis results without the occurrence of unusual airborne releases. Filters with gross beta activities above 40 may suggest activity from the emergency.

NOTE:

Radon may be a significant contributor to gross Beta activity when filters are counted soon after collection. Typically, filters collected by the REMP decay several days before counting.

- 12c. For analysis results of water samples, note any values in excess of the analysis less-than values. Compare analysis results greater than the less-than values to the PAGs in TAB 6. Compare sample analysis results from one location to another to see if levels decline with increasing distance downriver.

SPECIFIC TASKS:

HOW:

- 12d. Compare the measured values for the analyses of soil, pasture grass, and milk to the Protective Action Guides (PAGs) in TAB 6. Analysis results for soil may be reported in units of pCi/kg. To compare the results with the PAGs for soil, multiply these results by 80 kg/m² to express them in units of pCi/m².
- 12e. Relate sample analysis results to the sample contact count rates obtained following collection in the field. Note any mismatches (high dose rates and low analysis results or vice versa).
- 12f. If questions arise about sample identity, compare dates, times, and locations for all samples that are provided with the analysis results to the same information provided on the appropriate Sample Receipt Forms, Sample Collection Field Sheets, or APF/CC Collection Field Sheets, as applicable.
- 13. Notify the DASU promptly of any results above the preventative or emergency PAGs.
- 14. Document the review date and time for sample analysis results in the "Analysis Results Reviewed" column of the Emergency Environmental Sampling Log.
- 14a. Make entries in the appropriate columns on page 2 of the Emergency Environmental Sampling Log.
- 15. Arrange for an exchange of PPL and state sample analysis results for split samples.
- 15a. Arrangements for data exchange should be made with the state's Monitoring and Analysis Coordinator when results become available.
- 15b. Copy Reports of Analysis and Sample Receipt Forms or Sample Collection Field Sheets, as necessary to give to the state's Monitoring and Analysis Coordinator.

SPECIFIC TASKS:

HOW:

16. Compare state and PPL split sample analysis results.

16a. Calculate RPDs for state and PPL splits according to the following formula:

$$RPD = 100 \frac{|S - P|}{\bar{X}}$$

where:

RPD is the relative percent deviation between the state's analysis result and PPL's analysis result,

S is the state's analysis result

P is PPL's analysis result, and

\bar{X} is the mean of the state's and PPL's analysis results.

RPDs greater than 20% for liquids or greater than 35% for solids require the determination of the Split Error Ratio (SER) for the samples as a final test of agreement between analysis results.

16b. If applicable, calculate SERs for state and PPL splits according to the following formula:

$$SER = |S - P| / (2\sigma_s + 2\sigma_p)$$

where:

SER is the Split Error Ratio,

S is the state's analysis result,

P is PPL's analysis result,

σ_s is the one-sigma uncertainty of the state's analysis result and σ_p is the one-sigma uncertainty of PPL's analysis result.

SERs above 1.5 when the analysis results are at least 5 times analysis MDCs are an indication of disagreement between the analyses, including the calculated RPD/SER values.

SPECIFIC TASKS:

HOW:

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- | | |
|------|--|
| 17. | Notify the DASU of any state and PPL splits that do not compare favorably. |
| 16c. | Make a list of the splits for which the state's and PPL's results do not compare favorably. |
| 16d. | Consider re-analyses of all state and PPL split samples for which agreement is questionable. |