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243 - 243 - RADIOLOGICAL LIAISON

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*Ax45*

PROCEDURE COVER SHEET

PPL SUSQUEHANNA, LLC	NUCLEAR DEPARTMENT PROCEDURE	
RADIOLOGICAL LIAISON: Emergency Plan-Position Specific Instruction		EP-PS-243 Revision 4 Page 1 of 4
<u>QUALITY CLASSIFICATION:</u> ( ) QA Program    (X) Non-QA Program	<u>APPROVAL CLASSIFICATION:</u> ( ) Plant    ( ) Non-Plant (X) Instruction	
EFFECTIVE DATE: <u>8-22-2002</u> PERIODIC REVIEW FREQUENCY: <u>2 Years</u> PERIODIC REVIEW DUE DATE: <u>8-22-2004</u>		
<u>RECOMMENDED REVIEWS:</u> ALL		
Procedure Owner: <u>Nuclear Emergency Planning</u> Responsible Supervisor: <u>Supv.-Ops Technology</u> Responsible FUM: <u>Supv.-Nuclear Emergency Planning</u> Responsible Approver: <u>General Manager-Plant Support</u>		

**RADIOLOGICAL LIAISON:**

Emergency Plan-Position Specific Procedure

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**WHEN:** Activation of the Emergency Operations Facility  
**HOW NOTIFIED:** Paged/Telenotifications  
**REPORT TO:** Dose Assessment Supervisor  
**WHERE TO REPORT:** Emergency Operations Facility

**OVERALL DUTY:**

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Communicate radiological/environmental status to the NRC and DEP/BRP.

**MAJOR TASKS:**

**TAB:**

**REVISION:**

---

Maintain the "Protective Action Recommendation" Form

TAB A

4

Communicate with the NRC and Pa. DEP/BRP regarding protective action recommendations

TAB B

3

Communicate with the Danville Water Authority and Pa. DEP/BRP regarding liquid releases from SSES.

TAB C

2

Maintain ongoing communications with the NRC and off-site agencies regarding radiological concerns.

TAB D

1

**SUPPORTING INFORMATION:**

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**TAB:**

Emergency Organization	TAB 1
Intentionally Blank	TAB 2
Emergency Classifications	TAB 3
Public Protective Action Recommendation Guide	TAB 4
Response Levels for Protective Action Guides	TAB 5
Intentionally Blank	TAB 6
Environmental Sampling Locations	TAB 7
Emergency Forms	TAB 8
• Protective Action Recommendation Form	
Commentary on filling out the Protective Action Recommendation Form	TAB 9

**REFERENCES:**

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SSES Emergency Plan

National Interim Primary Drinking Water Regulations, EPA 570/9-76-003, US Environmental Protection Agency, Washington D.C. 1976

Commonwealth of Pennsylvania State Emergency Plan, Appendix 6, Annex E - BRP Technical Assessments and Protective Actions, Sept. 22, 1988

NUREG-0654, Planning Standards and Evaluation Criteria

NUREG-0731, Guidelines for Utility Management Structure and Technical Resources, September 1980

NUREG-0696, Functional Criteria for Emergency Response Facilities

FDA Guidance: "Accidental Radioactive Contamination of Human Food and Animal Feed and Recommendations for State and Local Governments." Federal Register, pp 47073-47083, October 22, 1982

ICRP Publication 28, The Principles and General Procedures for Handling Emergency and Accidental Exposures of Workers. International Commission of Radiation Protection. (1978)

IE Notice 83-28

NCRP Report 55, Protection of the Thyroid Gland in the Event of Releases of Radioiodine, National Council Radiation Protection and Measurements. (1977)

NCRP Report #116, Limitation of Exposure to Ionizing Radiation, National Council on Radiation Protection and Measurements. (1993)

EPA Manual of Protective Action Guides and Protective Actions for Nuclear Incidents (EPA 400-R-92-001 May 1992)

EC-ENVR-1047, Protective Action Guides, (PAGs), for the Evaluation of Abnormal, Unusual, or Unplanned Liquid Releases to the Susquehanna River

**MAJOR TASK:**

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Maintain the "Protective Action Recommendation" form.

**SPECIFIC TASKS:**

**HOW:**

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- |   |   |
|---|---|
| 1. Determine when the last Protective Action Recommendation Form was communicated to DEP/BRP. | 1a. Contact the DASU or RPC, as appropriate, for a status update.   |
| 2. Complete the "Protective Action Recommendation" form.                                      | 2a. Approximately every thirty minutes, telephone DEP/BRP and relay information contained in the "Protective Action Recommendation" form.<br><br>(1) Complete the "Protective Action Recommendation" form.<br><br>(a) Consult with the Engineering Support Supervisor for plant status and prognosis.<br><br>(b) Consult with the Dose Assessment Supervisor and/or Dose Assessment Staffer for radiological release data and status.<br><br>(c) Consult with the Dose Assessment Supervisor and/or the Recovery Manager on Emergency Classification and Protective Action Recommendations. |

**HELP**

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**Protective Action  
Recommendation Form  
See TAB 8**

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**SPECIFIC TASKS:**

**HOW:**

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**HELP**

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**Commentary on Filling Out the  
Protective Action Recommendation  
Form  
See TAB 9**

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**HELP**

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**Emergency Classifications  
See TAB 3**

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**HELP**

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**Public Protective Action  
Recommendation Guide  
See TAB 4**

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**HELP**

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**Response Levels for Protective  
Action Guides  
See TAB 5**

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3. Obtain approval for the "Protective Action Recommendation" form.

3a. The Dose Assessment Supervisor can approve the form if there is no change in the emergency classification or public protective action section.

3b. The Recovery Manager must approve the form if there is a change in the emergency classification or the public protective action recommendation.

**NOTE:**

**The Recovery Manager should be offered the opportunity to approve the form the first time it is prepared in the EOF.**

3c. Communicate results on PAR form to DEP/BRP. (See Tab B)

**SPECIFIC TASKS:**

**HOW:**

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4. Distribute the "Protective Action Recommendation" form.

4a. Deliver the completed approved PAR form to the Administrative Assistant for distribution.

**NOTE:**

**Distribution of the form is performed by the Administrative Support Staffer.**

**MAJOR TASK:**

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Communicate with Pa. DEP/BRP and NRC regarding protective action recommendations.

**SPECIFIC TASKS:**

**HOW:**

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1. Communicate with Pa. DEP/BRP.

1a. Approximately every thirty minutes, telephone DEP/BRP and relay information contained in the "Protective Action Recommendation" form.

**NOTE:**

PA DEP/BRP representatives may request that updates should be provided solely to their representative at the EOF upon their arrival. That practice is acceptable upon verification by telephone with PA DEP/BRP.

2. Communicate with the NRC Radiological Response Team.

**NOTE:**

The NRC may send a response team to the EOF or communicate via telephone.

The "Protective Measures Coordinator" and "Health Physics Network" FTS-2001 telephone lines are located at your workstation.

2a. Answer any questions they may have.

**MAJOR TASK:**

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Communicate with the Danville Water Authority and the Pa. DEP/BRP regarding liquid releases from SSES.

**SPECIFIC TASKS:**

**HOW:**

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1. Notify the Danville Water Authority when a liquid release occurs from SSES which is greater than the Unusual Event level.

1a. Contact the Authority when the release is greater than the Unusual Event level, calculated at the point where it enters the river.

**NOTE:**

**Telephone number for the Danville Water Authority is listed in the "Emergency Telephone Directory."**

1b. Inform them this is a courtesy call only, and that no protective actions are required at this time.

1c. Inform them Pa. DEP/BRP will contact the Water Authority if any protective action is required.

2. Notify Pa. DEP/BRP of the status of calculations of concentrations in water at Danville.

2a. The telephone number for Pa. DEP/BRP is located in the "Emergency Telephone Directory."

2b. Review the calculation with them to determine if the water concentration at Danville exceeds the Protective Action Guidelines.

**HELP**

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**Public Protective Action  
Recommendation Guide  
See TAB 4, Section 4.2**

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**SPECIFIC TASKS:**

**HOW:**

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**NOTE:**

**The Chemistry Coordinator normally performs this calculation and communicates it to the Dose Assessment Staff. As a back-up, the Field Team Director will verify this calculation.**

3. Generate a "Protective Action Recommendation Form" when a "Protective Action Guide" is exceeded.

3a. Consult with the Dose Assessment Supervisor regarding a recommendation.

3b. Prepare a "Protective Action Recommendation" form.

3c. Obtain approval of the form from the Recovery Manager.

3d. Notify Pa. DEP/BRP of our recommendation.

(1) Inform them PPL had previously talked to the Danville Water Authority about the release but provided no protective action recommendation.

**NOTE:**

**PEMA will be notified of our recommendation by the Recovery Manager.**

**MAJOR TASK:**

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Maintain ongoing communications with off-site agencies regarding radiological concerns.

**SPECIFIC TASKS:**

**HOW:**

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1. Respond to questions regarding radiological concerns from the DEP/BRP, NRC, Public Information Manager, and off-site agencies.

- 1a. Interact with the Dose Assessment Supervisor, Dose Assessment Staffer, Field Team Director, and the Radiation Protection Coordinator located in the TSC.

**NOTE:**

**Interaction with the Liaison Supervisor and Engineering Support Staff may also be appropriate, dependent on the nature of the question(s).**

- 1b. When the emergency condition progresses to the ingestion phase from the plume phase, interact with the Dose Assessment Supervisor to be cognizant of environmental sampling that is being performed.

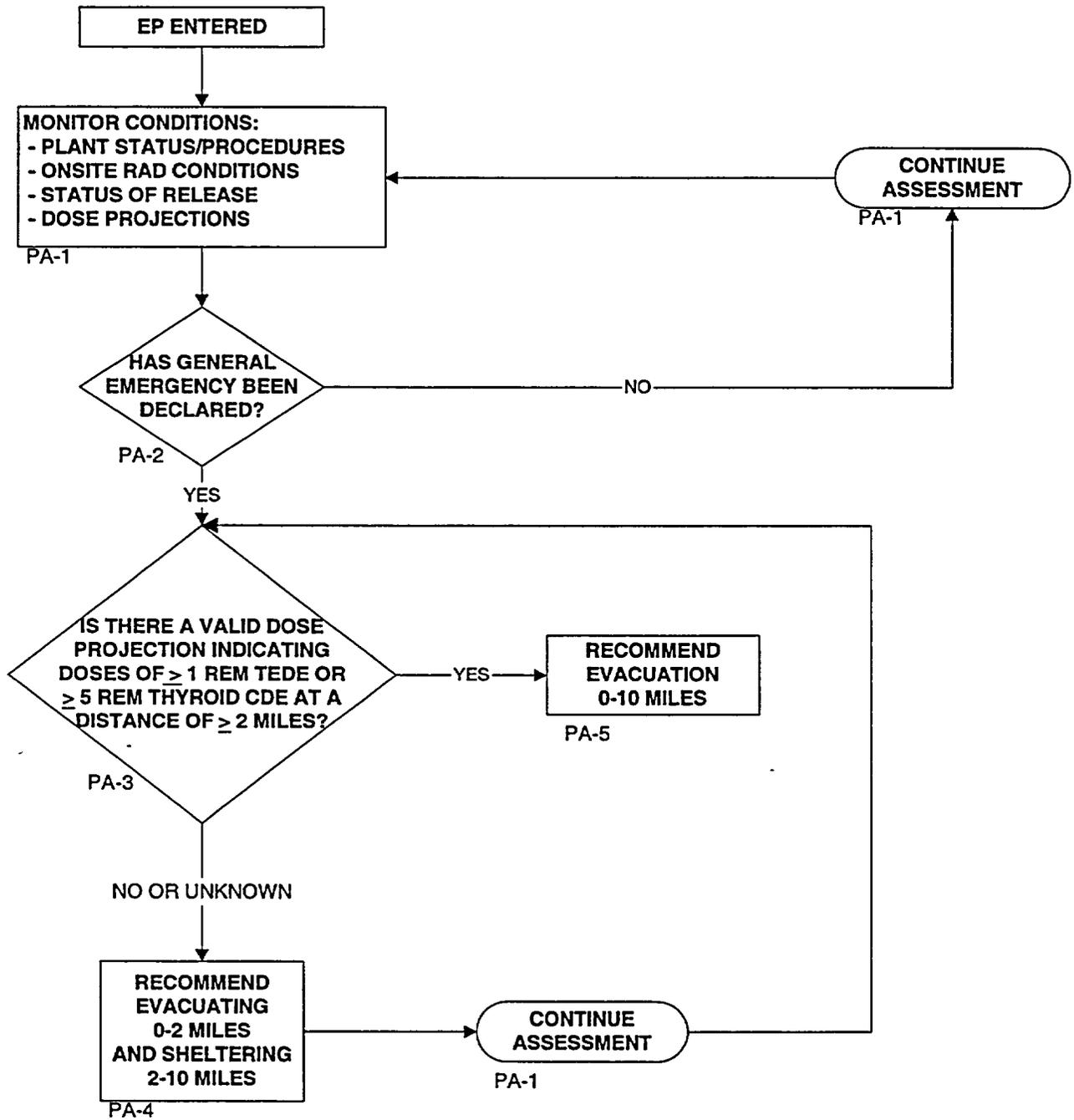
**HELP**

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**Environmental Sampling  
Locations  
See TAB 7**

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PAR AIRBORNE RELEASES



**NOTES**

1. PA-# CAN BE USED TO REFER TO SECTION 4.1 OF THE PROCEDURE FOR MORE DETAILED INFORMATION ON THE ACTION TO BE TAKEN.
2. DOSE PROJECTIONS DO NOT INCLUDE DOSE ALREADY RECEIVED.
3. TEDE - WHOLE BODY (TEDE) IS THE SUM OF EFFECTIVE DOSE EQUIVALENT RESULTING FROM EXPOSURE TO EXTERNAL SOURCES THE COMMITTED EFFECTIVE DOSE EQUIVALENT (CEDE) FROM ALL SIGNIFICANT INHALATION PATHWAYS AND THE DOSE DUE TO GROUND DEPOSITION.
4. CDE - COMMITTED DOSE EQUIVALENT TO THE CHILD THYROID.

**PAR LIQUID RELEASES**

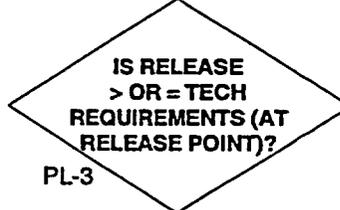
RADIONUCLIDE	Isotopic Limit (uCi/ml)
Ag-110m	1.1E <sup>-6</sup>
As-76	7.2E <sup>-7</sup>
Ba-140	1.1E <sup>-6</sup>
Ce-141	3.6E <sup>-6</sup>
Co-58	1.1E <sup>-4</sup>
Co-60	1.2E <sup>-5</sup>
Cr-51	7.2E <sup>-5</sup>
Cs-134	2.4E <sup>-4</sup>
Cs-137	2.4E <sup>-6</sup>
Fe-55	2.4E <sup>-5</sup>
Fe-59	2.4E <sup>-6</sup>
H-3	2.4E <sup>-4</sup>
I-129	1.2E <sup>-8</sup>
I-131	3.6E <sup>-8</sup>
La-140	7.2E <sup>-7</sup>
Mn-54	3.6E <sup>-6</sup>
Mo-99	7.2E <sup>-6</sup>
Na-22	4.8E <sup>-6</sup>
Nb-95	3.6E <sup>-6</sup>
Ni-59	3.6E <sup>-6</sup>
Ni-63	6.0E <sup>-7</sup>
P-32	3.6E <sup>-7</sup>
Ru-103	2.4E <sup>-6</sup>
Ru-106	3.6E <sup>-7</sup>
Sb-124	7.2E <sup>-7</sup>
Sb-125	3.6E <sup>-6</sup>
Sr-89	2.4E <sup>-7</sup>
Sr-90	9.6E <sup>-8</sup>
Tc-99m	1.1E <sup>-5</sup>
Y-90	7.2E <sup>-7</sup>
Zn-65	3.6E <sup>-6</sup>
Zr-95	2.4E <sup>-6</sup>

**ENTRY:**  
INDICATIONS OF A POTENTIAL LIQUID RELEASE  
- UNISOLABLE RADWASTE TANK RELEASE  
- LEAK TO COOLING TOWER BASIN  
- LEAK TO SPRAY POND

PL-1

ENSURE CHEM/ESD TAKES AND ANALYZES SAMPLES

PL-2



No

NO ACTION REQUIRED

CONTINUE MONITORING

PL-3

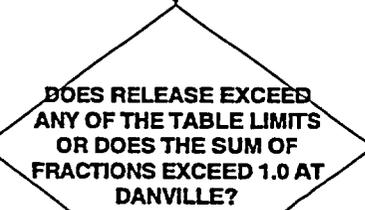
Yes

RAD PERSONNEL NOTIFY DANVILLE AND BRP THAT A RELEASE HAS OCCURRED

PL-4

CHEM/FTD EVALUATES RELEASE vs PAG

PL-5



No

RAD PERSONNEL NOTIFY DANVILLE THAT NO PAR IS REQUIRED

PL-8

PL-6

Yes

RAD PERSONNEL NOTIFY DEP/BRP FOR DANVILLE TO DIVERT DRINKING WATER SUPPLY & ESTIMATED TIME OF ARRIVAL OF RELEASE AT DANVILLE

PL-7

**NOTES:**

1. PL-# CAN BE USED TO REFER TO SECTION 4.2 OF THE PROCEDURE FOR MORE DETAILED INFORMATION ON THE ACTION TO BE TAKEN.
2. CALLS TO DANVILLE ARE COURTESY INFORMATION CALLS ONLY. PROTECTIVE ACTION RECOMMENDATION CALLS MUST BE MADE BY DEP/BRP.

## **PUBLIC PROTECTIVE ACTION RECOMMENDATION GUIDE**

### **AIRBORNE RELEASES**

#### **PA-1 MONITOR CONDITIONS FOR PAR APPLICATION**

The following conditions should be continuously evaluated to determine if a PAR should be implemented or changed:

- Plant status and prognosis for changes in conditions
- Onsite radiological conditions
- Status of actual or potential radioactive releases
- Offsite dose projections or actual offsite radiological conditions
- Escalation in Emergency Classification (i.e., General)

**(Go to PA-2)**

#### **PA-2 HAS A GENERAL EMERGENCY BEEN DECLARED?**

- YES** - If a GENERAL EMERGENCY has been declared, a PAR must be made within 15 minutes of the emergency declaration. The PAR requirement is found in NUREG-0654. **(Go to PA-3)**
- NO** - If a GENERAL EMERGENCY has not been declared, continue to monitor plant status, parameter trends, and prognosis for termination or escalation of the event. **(Go to PA-1)**

#### **PA-3 IS THERE A VALID DOSE PROJECTION INDICATING DOSES OF $\geq 1$ REM TEDE OR $\geq 5$ REM CDE CHILD THYROID AT A DISTANCE OF $> 2$ MILES?**

- YES** – If the projected doses at 2 miles are  $\geq 1$  REM TEDE or  $\geq 5$  REM CDE child thyroid, then full evacuation (0-10 miles) is recommended.

**(Go to PA-5)**

- NO/UNKNOWN** – **(Go to PA-4)**

**PA-4 RECOMMEND EVACUATION 0-2 MILES; SHELTER  
2-10 MILES**

Limited Evacuation (0-2 miles) and sheltering is appropriate for events that are significant enough to cause a General Emergency classification and dose projections are low, unknown, or below full evacuation guidelines.

**PA-5 EVACUATE 0-10 MILES**

Full evacuation of members of the general public is recommended at this point based on the emergency classification and dose projections.

**LIQUID**

**PL-1 ENTRY**

This section is entered when there are indications of a potential radioactive liquid release.

Indications of potential releases include:

- an unisolable radwaste tank release.
- leaks to cooling tower basin
- leak to spray pond

**(Go to PL-2)**

**PL-2 CHEMISTRY/ENVIRONMENTAL SAMPLING DIRECTOR (ESD) TAKES AND ANALYZES SAMPLE**

**(Go to PL-3)**

**PL-3 IS RELEASE  $\geq$  TECHNICAL REQUIREMENTS LIMITS (AT THE RELEASE POINT)?**

- YES** - Releases are at or greater than Technical Requirements limits when Chemistry determines that the limits are exceeded based on methodologies described in the ODCM and applicable Chemistry procedures.
- NO** - If the release is  $<$  Technical Requirements limits, then no notifications are required and monitoring should continue.

**(Go to PL-4)**

**PL-4 RAD PERSONNEL NOTIFY DANVILLE AND BRP THAT A RELEASE HAS OCCURRED**

Depending on which facility is activated, the notification to Danville and BRP will be made by the RPC (TSC) or the Radiological Liaison (EOF).

**DO NOT MAKE ANY PROTECTIVE ACTIONS RECOMMENDATIONS AT THIS TIME.**

**PL-5 CHEM/FTD EVALUATES RELEASE VERSUS PAGs**

The results of the sample analysis are compared to the PAGs for radionuclides in drinking water. The analysis calculates the expected concentration at Danville, taking into account the dilution afforded by the river.

**PL-6 DOES RELEASE EXCEED PAGs (AT DANVILLE)?**

- YES** - If a single isotope exceeds the PAG or the sum of the fractions exceeds 1.0, then a protective action recommendation should be made for Danville to **DIVERT** its **DRINKING WATER** supply to a backup supply until the release has passed.

**(Go to PL-7)**

- NO** - If the PAGs are not exceeded, monitoring should continue and the State should be notified that no PAR for the liquid release is required. **(Go to PL-8)**

**PL-7 RAD PERSONNEL NOTIFY DEP/BRP OF PAR**

Depending on which facility is activated, the PAR notification to DEP/BRP will be made by the RPC (TSC) or the Radiological Liaison (EOF). **The PAR FORM shall be used to document the PAR.**

**DO NOT COMMUNICATE THE PROTECTIVE ACTION RECOMMENDATION TO DANVILLE. THE DEP/BRP IS RESPONSIBLE FOR THIS COMMUNICATION.**

**PL-8 RAD PERSONNEL NOTIFY DEP/BRP**

No PAR is required. Depending on which facility is activated, the RPC (TSC) or the Radiological Liaison (EOF) shall notify DEP/BRP that no PAR is required.

Affected Unit \_\_\_\_\_

Control No. \_\_\_\_\_

**PROTECTIVE ACTION RECOMMENDATION FORM**  
**SUSQUEHANNA STEAM ELECTRIC STATION**

This is a Drill       This is **NOT** a Drill      Preparer: \_\_\_\_\_

<b>The EMERGENCY CLASSIFICATION is:</b>			
<input type="checkbox"/> Unusual Event	<input type="checkbox"/> Alert	<input type="checkbox"/> Site Area Emergency	<input type="checkbox"/> General Emergency

Basis: EAL # \_\_\_\_\_

**This represents:**

Initial Classification     Escalation     Reduction     No Change in the Classification Status

**Emergency Action(s) implemented onsite:**

- None
  - Local Area Evacuation
  - Site Accountability
  - Evacuation of non-essential personnel
  - KI to onsite personnel
  - Other \_\_\_\_\_
- Bases: \_\_\_\_\_

<b>The PROTECTIVE ACTION RECOMMENDATION is:</b>	
<input type="checkbox"/> No Protective Action Recommendation Required	
<input type="checkbox"/> Evacuate 0-2 miles and Shelter 2-10 miles	<input type="checkbox"/> Relocation
<input type="checkbox"/> Evacuate 0-10 miles	<input type="checkbox"/> Control of Access
<input type="checkbox"/> Divert Danville Drinking Water*	<input type="checkbox"/> Contamination Controls/Decon
	<input type="checkbox"/> Other
*Expected arrival of release at Danville: _____	
This represents: <input type="checkbox"/> Initial <input type="checkbox"/> Change <input type="checkbox"/> No Change in the Protective Action Recommendation	



**COMMENTARY ON FILLING OUT THE  
PROTECTIVE ACTION RECOMMENDATION FORM**

1. **Emergency Classification, Basis** – The intent is to list each EAL that led to the current Classification.
2. **Emergency Actions, Bases** – The intent is to describe the bases for the Actions implemented, especially if they are not a mandatory result of the EAL and Classification described above. For the EOF, completion of this line is optional.

Example wording for a local area evacuation may be “local hi rad and hi temp alarms in HPCI pump room.” Example wording for administration of KI may be “dose projections > 25 rem to team crimping release path piping.”

3. **Plant Status as Basis for PAR** – The intent is to briefly describe key elements of plant status and/or prognosis that entered into the decision making for the PAR that was adopted. Examples to consider may include: operating status (shut down, ATWS, etc.), indications of fuel (or cladding) degradation, ability to cool the core, integrity of primary and secondary containment, status of ventilation treatment (filtration, etc.) and status of remedial or mitigating actions.

An example completed statement for EAL 3.4 may be: High reactor coolant activity and inability to terminate coolant leak outside primary containment within several hours.

4. **Radioactive Release as Basis for PAR** – Examples of information to include may be the anticipated duration of the release, whether release rates are increasing or decreasing, and/or if there was a puff release. The vent(s) that is (are) the primary release point(s) may also be included if relevant to the discussion process. The intent is to document information used in the PAR decision making.

For field data, the “yes” block should be checked if the correlation between field data and projected data is reasonable (ratio of measured to projected data is between 0.1 and 5.0).

5. **Weather Conditions as Basis for PAR** – Weather conditions that contributed to the PAR decision making should be described. Examples of information to include may be wind direction (or affected sector), wind speed, stability class, precipitation level, and/or ice/snow conditions. If a dose projection printout is to be attached, there is no need to write on information that is on that form.
6. **Dose Projections as Basis for PAR** – The intent is to indicate whether projected doses are less than or greater than values used in the PAR decision making flowchart. Specific listing of calculated TEDE and/or child thyroid CDE values is discouraged. An example supplemental comment may be “controlling dose is child thyroid CDE from releases of radioiodines.”

7. **Approval of Form Contents** – The “Facility Lead” (ED or RM) is to approve if changes in Classification or PAR have occurred since the form was last transmitted. If no change has occurred, the “dose assessment lead” (RPC or DASU) normally would approve the form, although the Facility Lead always has the authority to sign the form.