Union of Concerned Scientists
Citizens and Scientists for Environmental Solutions

January 1, 2013

Cindy Bladey
Chief, Rules, Announcements, and Directives Branch
Office of Administration, Mail Stop TWB-05-B01M
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Docket ID NRC-2012-0246
Subject: Request for Comments: Consideration of Environmental Impacts of Temporary Storage of Spent Fuel After Cessation of Reactor Operation

Dear Ms. Bladey:

On behalf of the Union of Concerned Scientists, I respectfully submit the enclosed comments in response to the notice published October 25, 2012, in the Federal Register titled "Consideration of Environmental Impacts of Temporary Storage of Spent Fuel After Cessation of Reactor Operation" (ADAMS Accession No. ML12305A035).

Sincerely,

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Enclosure: Comments on Waste Confidence Decision Scoping

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Comments on Waste Confidence Decision Scoping

UCS recommends that the NRC conduct a formal lessons learned evaluation of its NEPA processes that led to adverse court decisions in 1979 and 2012 that identifies and corrects the fundamental flaws.

These programmatic enhancements provide the proper foundation for our recommendations that the NRC's response to the Waste Confidence Decision court ruling:

1. Include in the generic environment impact statement an explicit evaluation of the effects of a repository not being available.

2. Include in the generic environmental impact statement scenarios involving wet pool and dry storage along with associated regulations, or lack thereof, intended to protect the public and the environment from these hazards.

3. Include a formal evaluation of spent fuel storage if a repository is not available at the end of the evaluation timeframe. The NRC must not defer that formal evaluation to the middle of the century.

Background and justification for these recommendations is presented in the following sections.

NRC's programmatic NEPA failings: As NRC Deputy Executive Director for Materials, Waste, Research, State, Tribal and Compliance Programs Michael Weber explained in his September 12, 2012, speech (ADAMS Accession No. ML12262A436), the initial 1984 Waste Confidence Decision was issued by the NRC in response to a 1979 decision by the U.S. Court of Appeals for the District of Columbia Circuit in the *Minnesota v. NRC* case. Weber explained that "the court directed the NRC to determine whether a disposal solution for spent fuel would be available by the time a reactor's operating license expires and, if not, whether the spent fuel could be safely stored after that date." Weber further explained that this current effort is in response to this same court having determined on June 8, 2012, that "the NRC violated the National Environmental Policy Act in issuing its 2010 Waste Confidence decision and the accompanying Temporary Storage Rule" in a case against the NRC initiated by the states of New York, New Jersey, Connecticut and Vermont.

It is disconcerting that the NRC has repeated shortcomings with respect to fulfilling its NEPA obligations. But for the states' interventions, the NRC may not have addressed the matter until its initial Waste Confidence Decision in 1984 and would have inadequately addressed it in its most recent update of that decision. It would be better if the NRC met its NEPA obligations without having to be compelled to do so by the states and the courts.

This history suggests the agency has a fundamental flaw in this area. During Luis Reyes' tenure as the Executive Director for Operations, the NRC instituted a formal lessons-learned program intended to identify root causes for its shortfalls and implement applicable fixes. The NRC's

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process culminating in its Waste Confidence Decisions seems ripe for a formal lessons-learned assessment. Quite obviously, there's something wrong here that demands remediation so as to prevent the states and courts from having to step in and fix the NRC's mistakes.

UCS Recommendation: The NRC should conduct a formal lessons-learned evaluation of its NEPA processes that resulted in adverse court decisions in 1979 and 2012 to identify and correct the programmatic deficiencies.

Resolving these process impairments will facilitate a proper environmental impact statement supporting the Waste Confidence Decision. UCS has three concerns and associated recommendations regarding the environmental impact statement.

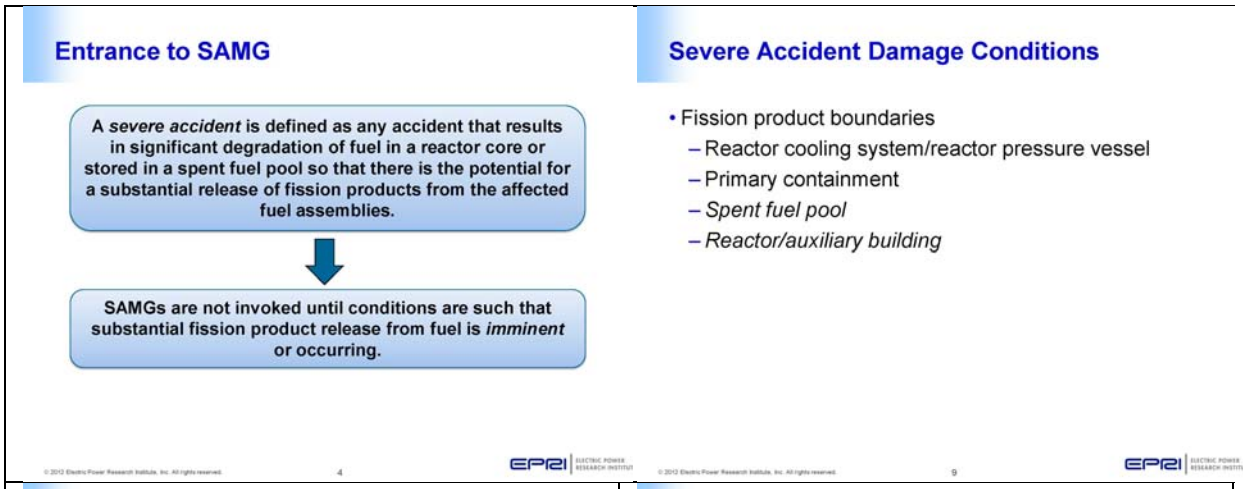
1. **NRC's blindspot regarding repositories**: The NRC's notice in the *Federal Register* concerning its Waste Confidence Decision scoping effort (ADAMS Accession No. ML12305A035) defined three deficiencies the court described in its June 8, 2012, ruling. The NRC's notice explained one of the deficiencies as being "Related to the Commission's conclusion that permanent disposal will be available when necessary, the Court held that the Commission did not evaluate the environmental effects of failing to secure permanent disposal." The title of the NRC's *Federal Register* notice was "Consideration of Environmental Impacts of **Temporary** Storage of Spent Fuel After Cessation of Reactor Operation" [emphasis added].

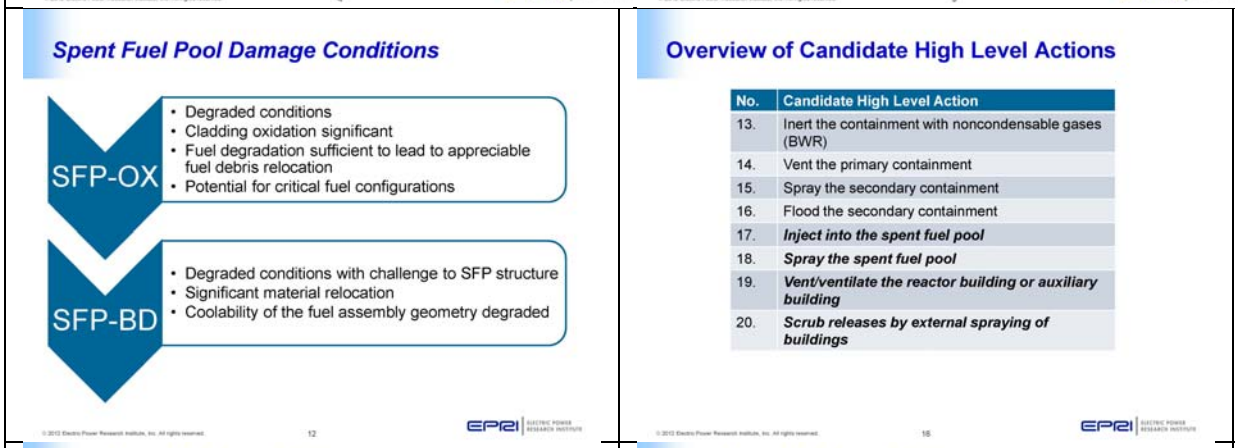
   Storage of spent fuel after cessation of reactor operation would only be temporary until shipment to and placement within a repository for permanent disposal. Perhaps it is merely semantics. But perhaps it is indicative of the NRC's overly narrow perspective on the matter that contributed to the court's finding this deficiency in its June 2012 ruling. The NRC's title implies the agency believes that it's a question of when, not if, spent fuel will go to a repository for permanent disposal. The court's ruling implies that this outcome cannot be assumed by the NRC.

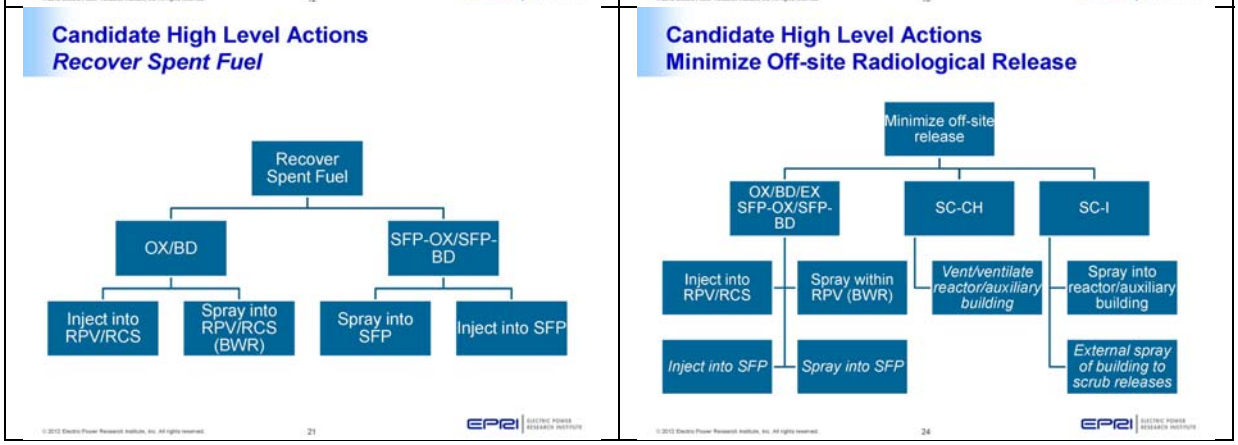
   UCS Recommendation: The NRC must comply with the court's mandate and explicitly evaluate within its environmental impact statement the effects of a repository not being available.

2. **NRC's blindspot regarding relative risk of wet pool v. dry storage of spent fuel**: The NRC contends that it does not know the relative risk between spent fuel stored in wet pools and in dry storage. Failure to recognize that spent fuel stored in wet pools is more hazardous than spent fuel in dry storage will likely impair the agency's assessment of environmental impacts of spent fuel storage after cessation of reactor operations.

   Ample evidence demonstrates beyond reasonable doubt that spent fuel stored in wet pools is more hazardous than spent fuel in dry storage. For example, the Electric Power Research Institute (EPRI) made a presentation on severe accident management guidelines (SAMGs) to the NRC staff on November 7, 2012. Slides from EPRI's presentation relevant to the spent fuel pool risk include the following:







The entire 27-slide package is available in the NRC's ADAMS online electronic library under Accession No. ML12318A079 for review to confirm our statement here that none of the slides mention spent fuel in dry storage. EPRI's omission is not an oversight – it recognizes that spent fuel is significantly less hazardous in dry storage than in wet pools.

Further evidence of this irrefutable point is in the emergency procedures submitted to the NRC earlier in 2012 by the owner of the Ginna nuclear plant (ADAMS Accession No. ML12037A117). This submittal included the procedures used by the plant's operating staff to classify the appropriate emergency level.

As shown in Figure 1 (extracted from Ginna's emergency procedures), spent fuel in dry storage can, at most, require an Unusual Event to be declared. No individuals outside the plant's security perimeters ever need to be evacuated or sheltered for their protection during an Unusual Event.

But spent fuel in wet pools can result in the declaration of a General Emergency, during which members of the public may need to be evacuated or directed to remain sheltered for their protection.

The NRC routinely inspects the procedures used at Ginna and other nuclear plants to classify emergency levels. These NRC inspections have not identified problems with the classification procedures treating spent fuel pool and dry storage so disparately. Hence, the NRC's actions demonstrate that it truly understands the relative risk between irradiated fuel in spent fuel pools and in dry storage.

The point relative to the Waste Confidence Decision scoping effort involves scenarios. Currently, the NRC's regulations do not require that spent fuel be transferred to dry storage after reactor operations cease. Theoretically, spent fuel could reside in wet pools for many decades. But NRC collapses the scope of other regulations, such as the emergency planning requirements contained in 10 CFR 50.47, after reactor operations cease.

For a plant with an operating reactor, federal regulations require that an emergency exercise be conducted at least once every two years. NRC evaluates the performance of the plant owner in carrying out their roles and responsibilities during the simulated emergency. And the Federal Emergency Management Agency (FEMA) evaluates how well local and state entities perform their tasks to protect the public. If weaknesses or deficiencies exist, these periodic exercises can flush them out and fix them. But whether spent fuel is in wet pools or dry storage, such periodic exercises are not conducted after reactor operations cease (e.g., Zion in Illinois, Haddam Neck in Connecticut, Big Rock Point in Michigan, and apparently after 2013, Kewaunee in Wisconsin).

Consequently, while spent fuel stored in wet pools could trigger a General Emergency necessitating activation of emergency sirens and state-level recommendations for evacuation and/or sheltering, no federal regulations currently require that emergency planning measures be in place and periodically exercised once reactor operations cease. If all spent fuel were required to be in dry storage, the risk would be far better managed and the need for emergency planning, training, and exercises obviated.

UCS Recommendation: Scenarios considered in the generic environmental impact statement for spent fuel storage after cessation of reactor operation must include wet pool and dry storage along with associated regulations, or lack thereof, intended to protect the public and the environment.

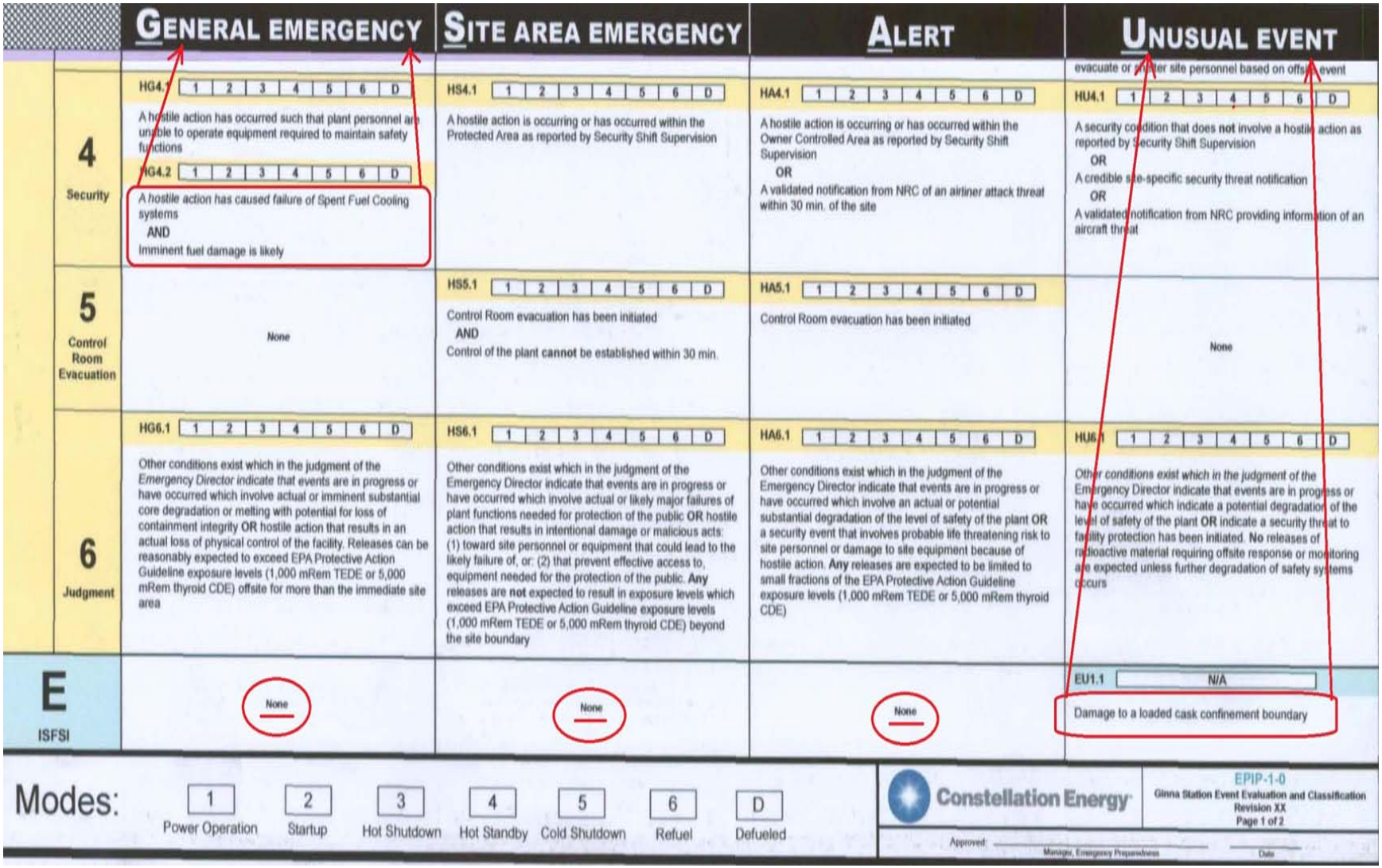
3. **NRC's proposed evaluation timeline**: During the public meeting conducted by the NRC on the afternoon of November 14, 2012 regarding the Waste Confidence Decision scoping, NRC's Paul Michalak described the potential scenarios developed by the agency's internal

scoping work: “Currently, we will evaluate spent fuel storage until a repository is available. At the middle of the century we’ll evaluate storage until a repository is available until the end of the century, and continued storage in the event a repository is not available” (ADAMS Accession No. ML12331A347, page 15, lines 15-18).

This timeline, if followed, reinforces rather than resolves a deficiency identified by the court in its June 8, 2012, ruling. Specifically, as NRC’s Tison Campbell explained during the public meeting, the court “found that the analysis didn’t evaluate the environmental effects of failing to secure permanent disposal” (ADAMS Accession No. ML12331A347, page 13, lines 20-22). The plan outlined by Mr. Michalak would sustain this failure for nearly four more decades. The NRC quite simply cannot resolve the court’s ruling with an IOU to perform the missing analysis at some point in the distant future.

UCS Recommendation: The NRC’s current efforts to resolve deficiencies in its 2010 Waste Confidence Decision update must include a formal evaluation of spent fuel storage if a repository is not available at the end of the evaluation timeframe. That formal evaluation must not be deferred to the middle of the century.

Figure 1: Ginna's Event Classification Procedure



	GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
				evacuate or shelter site personnel based on offsite event
4 Security	HG4.1 1 2 3 4 5 6 D A hostile action has occurred such that plant personnel are unable to operate equipment required to maintain safety functions HG4.2 1 2 3 4 5 6 D A hostile action has caused failure of Spent Fuel Cooling systems AND Imminent fuel damage is likely	HS4.1 1 2 3 4 5 6 D A hostile action is occurring or has occurred within the Protected Area as reported by Security Shift Supervision	HA4.1 1 2 3 4 5 6 D A hostile action is occurring or has occurred within the Owner Controlled Area as reported by Security Shift Supervision OR A validated notification from NRC of an airliner attack threat within 30 min. of the site	HU4.1 1 2 3 4 5 6 D A security condition that does **not** involve a hostile action as reported by Security Shift Supervision OR A credible site-specific security threat notification OR A validated notification from NRC providing information of an aircraft threat
5 Control Room Evacuation	None	HS5.1 1 2 3 4 5 6 D Control Room evacuation has been initiated AND Control of the plant **cannot** be established within 30 min.	HA5.1 1 2 3 4 5 6 D Control Room evacuation has been initiated	None
6 Judgment	HG6.1 1 2 3 4 5 6 D Other conditions exist which in the judgment of the *Emergency Director indicate* that events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity **OR** hostile action that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels (1,000 mRem TEDE or 5,000 mRem thyroid CDE) offsite for more than the immediate site area	HS6.1 1 2 3 4 5 6 D Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public **OR** hostile action that results in intentional damage or malicious acts: (1) toward site personnel or equipment that could lead to the likely failure of, or: (2) that prevent effective access to, equipment needed for the protection of the public. **Any** releases are **not** expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels (1,000 mRem TEDE or 5,000 mRem thyroid CDE) beyond the site boundary	HA6.1 1 2 3 4 5 6 D Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant **OR** a security event that involves probable life threatening risk to site personnel or damage to site equipment because of hostile action. **Any** releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels (1,000 mRem TEDE or 5,000 mRem thyroid CDE)	HU6.1 1 2 3 4 5 6 D *Other conditions exist which in the judgment of the* Emergency Director indicate that events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant **OR** indicate a security threat to facility protection has been initiated. **No** releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs
E ISFSI	None	None	None	EU1.1 N/A Damage to a loaded cask confinement boundary

Modes: 1 Power Operation; 2 Startup; 3 Hot Shutdown; 4 Hot Standby; 5 Cold Shutdown; 6 Refuel; D Defueled

Constellation Energy

EPIP-1-0
Ginna Station Event Evaluation and Classification
Revision XX
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Approved: _____ Manager, Emergency Preparedness _____ Date