National Association of SARA Title III Program Officials

Concerned with the Emergency Planning and Community Right-to-Know Act

The Role of Local Emergency Planning Committees in Preparing for Climate Change Chemical Accident Risks

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I. INTRODUCTION

The Emergency Planning and Community Right-to-Know Act (EPCRA)[1] requires each local emergency planning committee (LEPC) to prepare an emergency plan for facilities handling hazardous substances. Since EPCRA's 1986 enactment, however, the role of LEPCs has surpassed this statutory requirement to encompass community-based, all-hazards emergency management and continuity of operations programs.[2] According to National Fire Protection Association (NFPA) standards, such an all-hazards approach requires that LEPC programs address human-caused, natural, and technological hazards.[3]

Beyond preparing programs, EPCRA further requires LEPCs to review existing programs annually or "more frequently as changed circumstances . . . may require."[4] In alignment with this statutory requirement, NFPA standards and Federal Emergency Management Agency (FEMA) guidance endorse continuous evaluation of existing programs.[5] Although neither the NFPA nor FEMA impose a timeline for such evaluations, both enumerate circumstances that may trigger the need to evaluate an existing program. Notably, under NFPA standards, the LEPC must re-evaluate its program if a change in hazards occurs that leads to different potential impacts.[6] Similarly, FEMA guidance provides that assessments, evaluations, and actual incidents may trigger the need to re-evaluate an existing program.[7] Consequently, as climate change creates new hazards and contributes to actual incidents, LEPCs may find it necessary to re-evaluate their existing programs.

The following three sections convey methods in which LEPCs may integrate climate change into their all-hazards programs. First, Part II examines how LEPCs can identify and assess climate change risks. Part III examines the duty of facilities to identify and adequately prepare for risks,

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[1] 42 U.S.C. §§ 11001–11050 (2020).
[2] *See, e.g.*, STANDARD ON CONTINUITY, EMERGENCY, & CRISIS MGMT. §§ 1.1, A.1.1 (NAT'L FIRE PROT. ASS'N 2019) (describing the scope of LEPC actions).
[3] *Id.* § 3.3.2.
[4] 42 U.S.C. § 11003(a).
[5] *See* FED. EMERGENCY MGMT. AGENCY, U.S. DEP'T OF HOMELAND SEC., CONTINUITY GUIDANCE CIRCULAR 33 (2018) [hereinafter CONTINUITY GUIDANCE CIRCULAR] ("Organizations should periodically review and revise their continuity strategy, [program], and supporting documentation . . . ."); STANDARD ON CONTINUITY, EMERGENCY, & CRISIS MGMT. § 10.1.2 ("Evaluations shall be conducted on a regularly scheduled basis and when the situation changes to challenge the effectiveness of the existing program.").
[6] STANDARD ON CONTINUITY, EMERGENCY, & CRISIS MGMT. § 10.1.3(2).
[7] CONTINUITY GUIDANCE CIRCULAR, *supra* note 6, at 33.

potentially including climate change risks. Lastly, Part IV examines methods for preparing the community to respond to climate change induced incidents.

II. IDENTIFICATION AND ASSESSMENT OF CLIMATE CHANGE RISKS

In 2014, a team of over 300 experts studied the science and impacts of climate change in the United States.[8] In its subsequent report, the team concluded that the global climate is already changing and will continue to change, resulting in increased severe weather events.[9] In addition to contributing to natural hazards, such severe weather events have also contributed to technological hazards, resulting in industrial accidents.[10] For example, historic floods caused by hurricane Harvey resulted in the loss of power that resulted in increased storage temperature that led to substance-decomposition and fire. Consequently, LEPCs must identify new risks resulting from climate change, including both natural hazards and resulting technological hazards. Nevertheless, identifying such hazards requires one to look beyond his or her past experience, because climate change may render it a poor predictor of future hazards.[11] Notably, however, the EPA has designed a five-step process that LEPCs may employ to identify and assess risks resulting from climate change.[12] The EPA contends that the process is suitable "for any type of place-based planning," despite its original focus on estuary management.[13] The following paragraphs outline this process.

Step 1: Communication and Consultation

In Step 1, the LEPC identifies and contacts stakeholders, ascertains each stakeholder's pertinent interests or concerns, and establishes a schedule for stakeholder involvement.[14] LEPCs may utilize the following table to organize stakeholder information:

Stakeholder	Interests/concerns	Level of involvement	During which step(s) should you reach out to them?
1.		☐ Not participating ☐ Stay informed ☐ Active participant	
2.		☐ Not participating ☐ Stay informed ☐ Active participant	
3.		☐ Not participating ☐ Stay informed ☐ Active participant	
n.		☐ Not participating ☐ Stay informed ☐ Active participant	

Table 1: Stakeholder Information [15]

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[8] JERRY M. MELILLO, TERESE (T.C.) RICHMOND & GARY W. YOHE, U.S. GLOB. CHANGE RESEARCH PROGRAM, CLIMATE CHANGE IMPACTS IN THE UNITED STATES: THE THIRD NATIONAL CLIMATE ASSESSMENT iv (2014).

[9] *Id.* at 20–21.

[10] *See, e.g.*, U.S. CHEM. SAFETY & HAZARD INVESTIGATION BD., EXTREME WEATHER, EXTREME CONSEQUENCES: CSB INVESTIGATION OF THE ARKEMA CROSBY FACILITY AND HURRICANE HARVEY 1 (2018) (describing a fire at the Arkema facility resulting from the decomposition of refrigerated organic peroxides in the wake of Hurricane Harvey).

[11] *See* Jeff Johnson, *The Chemical Industry Must Plan Better for Severe Weather, U.S. Chemical Safety Board Says*, CHEMICAL & ENGINEERING NEWS (Nov. 17, 2017), https://cen.acs.org/articles/95/i46/chemical-industry-must-plan-better.html (quoting a Chemical Safety Board investigator's assertion that "companies can't rely on past experience" for emergency planning).

[12] OFFICE OF WATER, U.S. ENVTL. PROT. AGENCY, BEING PREPARED FOR CLIMATE CHANGE: A WORKBOOK FOR DEVELOPING RISK-BASED ADAPTATION PLANS 10 (2014).

[13] *Id.* at 6.

[14] *Id.* at 13.

[15] *Id.* at 16.

Step 2: Establishing the Context for the Vulnerability Assessment

In Step 2, the LEPC identifies its goals, which will define the subsequent scope of the risk assessment.[16]

Step 3: Risk Identification

In Step 3, the LEPC compares the goals identified in Step 2 against the following climate change stressors:

- Warmer summers;
- Warmer winters;
- Warmer water;
- Increasing drought;
- Increasing storminess;
- Sea level rise;
- Ocean acidification; and
- Any additional climate change stressors deemed impactful by the LEPC.[17]

In making the comparison, the LEPC identifies and documents the ways in which a climate change stressor may hinder its ability to reach a goal.[18] These enumerated hindrances comprise the LEPC's list of potential climate change risks.[19] If applicable, the LEPC should also identify and document the ways in which a climate change stressor may create opportunity in reaching a goal.[20] The LEPC may utilize the following table to compare its goals against climate change stressors:

Organizational goals	Warmer summers	Warmer winters	Warmer water	Increasing drought	Increasing storminess	Sea level rise	Ocean acidification
Goal ______							
Goal ______							
Goal ______							

[16] *Id.* at 19.
[17] *Id.* at 24.
[18] *Id.* at 26.
[19] *Id.*
[20] *Id.* at 28.

Table 2: Goal and Climate Stressor Comparison [21]

Table 3 provides an example in which the above table has been populated with risks based on pollution control goals of the Clean Water Act.

Clean Water Act goals	Warmer summers	Warmer winters	Warmer water	Increasing drought	Increasing storminess	Sea level rise	Ocean acidification
Controlling point sources of pollution and cleaning up pollution		☐ Loss of melting winter snows may reduce spring or summer flow volume, and raise pollutant concentration in receiving waters	☐ Temperature criteria for discharges may be exceeded (thermal pollution) ☐ Warmer temperatures may increase toxicity of pollutants	☐ Critical-low-flow criteria for discharging may not be met ☐ Pollutant concentrations may increase if sources stay the same and flow diminishes	☐ Combined sewer overflows may increase ☐ Treatment plants may go offline during intense floods	☐ Treatment plants may not be able to discharge via gravity at higher water levels ☐ Treatment infrastructure may be susceptible to flooding ☐ Sewage may mix with seawater in combined sewer systems ☐ Contaminated sites may flood or have shoreline erosion ☐ Sewer pipes may have more inflow (floods) or infiltration (higher water table)	
Controlling nonpoint sources of pollution	☐ Wildfires may lead to soil erosion	☐ Longer growing season can lead to more lawn maintenance with fertilizers and pesticides	☐ Higher solubility may lead to higher concentration of pollutants ☐ Water may hold less dissolved oxygen ☐ Higher surface temperatures may lead to stratification ☐ Greater algae growth may occur ☐ Parasites, bacteria may have greater survival or transmission	☐ Pollution sources may build up on land, followed by high-intensity flushes	☐ Streams may see greater erosion and scour ☐ Urban areas may be subject to more floods ☐ Flood control facilities (e.g., detention basins, manure management) may be inadequate ☐ High rainfall may cause septic systems to fail	☐ Tidal flooding may extend to new areas, leading to additional sources of pollution	☐ Decomposing organic matter releases carbon dioxide, which may exacerbate the ocean acidification problem in coastal waters

Table 3: Example Table, Populated with Risks [22]

The LEPC may utilize the following table to summarize the results of its comparison:

Organizational goal	Climate stressor	Risk	Is this an opportunity instead of a risk?
1.			
2.			
3.			
n.			

Table 4: Risk Summary Table [23]

Step 4: Risk Analysis

In Step 4, the LEPC prepares an initial qualitative assessment for each risk identified in Step 3.[24] The assessment should entail each risk's:

[21] *Id.* at 33.
[22] *Id.* at 29.
[23] *Id.* at 34.
[24] *Id.* at 35.

- Consequence, classified as:
    - (a) Low consequence;
    - (b) Medium consequence; or
    - (c) High consequence.[25]
- Likelihood, classified as:
    - (a) Low probability;
    - (b) Medium probability; or
    - (c) High probability.[26]
- Spatial extent of impact, classified as:
    - (a) Impact to a site;
    - (b) Impact to a place or region; or
    - (c) Extensive impact.[27]
- Time horizon, classified as:
    - (a) Greater than thirty years until onset;
    - (b) Between ten and thirty years until onset; or
    - (c) Already occurring or less than ten years until onset.[28]
- Habitat type (optional), grouping the risks associated with a certain type of habitat.[29]

The LEPC may utilize the following table to organize the results of its assessment:

Organizational goal	Climate stressor	Risk	Is this an opportunity instead of a risk?	Consequence (a–c)	Likelihood (a–c)	Spatial extent of impact (a–c)	Time horizon (a–c)	Habitat type	How confident are you in your risk analysis? Do you have sources that support your determinations?
1.									
2.									
3.									
4.									
5.									
n.									

Table 5: Risk Analysis Table [30]

Step 5: Risk Evaluation

In Step 5, the LEPC uses the risk analysis from Step 4 to prepare a consequence/probability matrix.[31] The LEPC then shares the matrix with stakeholders to receive feedback regarding the consequence and likelihood determinations conveyed by the matrix.[32]

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[25] *Id.* at 39.
[26] *Id.*
[27] *Id.*
[28] *Id.* at 40.
[29] *Id.*
[30] *Id.* at 43.
[31] *Id.* at 45.
[32] *Id.* at 46.

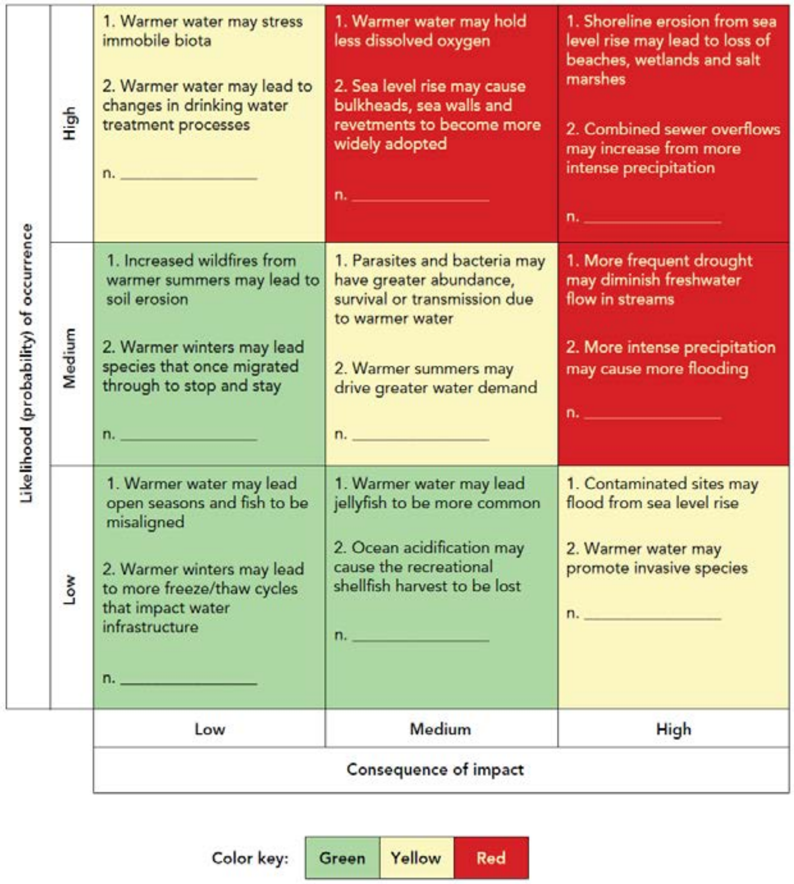

Figure 1: Example of a Consequence/Probability Matrix [33]

III. The Duty of Facilities to Prepare

Under the Clean Air Act,[34] a facility that produces, processes, handles, or stores an extremely hazardous substance has a duty to:

- "[I]dentify hazards which may result from such releases using appropriate hazard assessment techniques";
- "[D]esign and maintain a safe facility taking such steps as are necessary to prevent releases"; and
- "[M]inimize the consequences of accidental releases which do occur."[35]

Nevertheless, the specific actions required of facilities to comply with this duty when faced with climate change risks remain undefined. Although pre-incident mitigation is more cost-effective than post-disaster response, neither industry guidance nor federal regulations offer facilities a detailed framework for addressing severe weather events.[36] Consequently, many facilities remain unaware of

[33] *Id.* at 47.
[34] 42 U.S.C. §§ 7401–7671(q) (2020).
[35] *Id.* § 7412(r)(1).
[36] U.S. Chem. Safety & Hazard Investigation Bd., Report No. 2017-08-I-TX, Organic Peroxide Decomposition, Release, and Fire at Arkema Crosby Following Hurricane Harvey Flooding 226, 230 (2018) [hereinafter Fire at Arkema Crosby].

the potential for severe weather events to create process safety hazards.[37] As illustrated by Arkema Crosby, however, such ignorance does not necessarily safeguard facilities from criminal liability or eliminate their duty under the Clean Air Act.

Arkema Crosby

On August 24, 2017, Hurricane Harvey made landfall in southeast Texas, placing the Arkema Crosby facility in the storm's trajectory.[38] Over the next several days, the storm's historic rainfall caused flooding at the facility, located within the 100-year and 500-year flood plain.[39] At the time of flooding, the facility held over 350,000 pounds of organic peroxide products, which require refrigeration to prevent decomposition and combustion.[40] As flood waters surpassed design elevations, however, the facility lost power, backup power, and access to refrigerated warehouses.[41] In an effort to prevent the chemicals from decomposing, employees transferred them to standby refrigerated trailers.[42]

Nevertheless, when the refrigerated trailers began to flood, Arkema employees evacuated the facility and notified authorities of the hazard.[43] In response, authorities evacuated over 200 nearby residents.[44] As the temperature climbed in the flooded trailers over the following days, the chemicals in one trailer decomposed, causing the chemicals and trailer to burn.[45] Fumes produced by the decomposing chemicals traversed an adjacent highway, leading over twenty individuals to seek medical attention following exposure.[46] After a second fire ignited, authorities performed a controlled burn of the remaining chemicals, enabling residents to return to their homes a week after evacuating.[47]

Following its investigation, the Chemical Safety and Hazard Investigation Board (CSB) recommended that chemical facilities vulnerable to severe weather events:

- Determine the types of severe weather events that they are vulnerable to;
- Evaluate the risk of severe weather events and the adequacy of safeguards;
- Apply a conservative risk management approach in regards to risks posed by severe weather events; and
- Ensure that critical safeguards are not susceptible to failure by a common cause.[48]

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37 *Id.* at 30.
38 *Id.* at 1.
39 *Id.* at 2.
40 U.S. CHEM. SAFETY & HAZARD INVESTIGATION BD., EXTREME WEATHER, EXTREME CONSEQUENCES: CSB INVESTIGATION OF THE ARKEMA CROSBY FACILITY AND HURRICANE HARVEY 1, 3 (2018).
41 FIRE AT ARKEMA CROSBY, *supra* note 37, at 2.
42 *Id.*
43 *Id.*
44 *Id.* at 3.
45 *Id.*
46 *Id.*
47 *Id.*
48 *Id.* at 38.

Although the CSB recognized the lack of guidance available to Arkema,[49] Harris County prosecutors nonetheless filed two sets of charges in response to the incident.[50] First, prosecutors charged Arkema and an employee with felony assault for allegedly making misrepresentations to emergency response officials about the threat of the materials stored at the facility resulting in injury to two deputies.[51] However, in October of 2020, a judge dismissed this charge because the prosecutors failed to show the disaster and subsequent toxic release were foreseeable.[52]

Second, prosecutors charged Arkema, its CEO, and the Crosby plant manager with violating the Clean Air Act by recklessly emitting air pollution during the fire.[53] The prosecution contends that the flooding caused by Hurricane Harvey was foreseeable given that the area experienced three, 500-year floods shortly before the storm.[54] Because Arkema failed to adequately prepare for such flooding, the prosecution maintains that Arkema may be held criminally liable for the release.[55] Contrarily, Arkema argues that Hurricane Harvey, which caused the fire and resulting release, was an act of God rather than a foreseeable event.[56] The judge dismissed this charge, as well.[57]

In the end, the prosecution could not provide ample evidence to prove the chemical manufacturing corporation and one of its former employees acted willfully and recklessly.[58]

IV. PREPARING COMMUNITY RESIDENTS TO RESPOND

Because an incident may monopolize emergency resources, community resiliency depends upon preparing residents to protect themselves and their families, organizations, and properties.[59] To this end, most state emergency response commissions require LEPCs to integrate their emergency plan into an overall community preparedness plan.[60] Such a plan should establish the responsibility of residents to prepare prior to an accident.[61]

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49 *Id.* at 230.
50 Juan A. Lozano, *Trial to Begin over Arkema Chemical Plant Fire During Harvey*, U.S. NEWS & WORLD REP. (Feb. 17, 2020), https://www.usnews.com/news/us/articles/2020-02-17/trial-to-begin-over-arkema-chemical-plant-fire-during-harvey.
51 *Id.*
52 Juan A. Lozano, *Judge Tosses Case Over Chemical Plant Fire During Harvey,* U.S. NEWS & WORLD REP. (Oct. 1, 2020), https://www.usnews.com/news/business/articles/2020-10-01/judge-tosses-case-over-chemical-plant-fire-during-harvey
53 Lozano, *supra* note 51.
54 Rebecca Hersher, *Texas Criminal Trial Highlights Climate Liability for Factories in Floodplains*, NAT'L PUB. RADIO (Mar. 2, 2020, 4:58 PM), https://www.npr.org/2020/03/02/723217659/texas-criminal-trial-highlights-climate-liability-for-factories-in-floodplains.
55 *Id.*
56 Lozano, *supra* note 51.
57 Lozano *supra* note 54.
58 *Id.*
59 FED. EMERGENCY MGMT. AGENCY, U.S. DEP'T OF HOMELAND SEC., DEVELOPING AND MAINTAINING EMERGENCY OPERATIONS PLANS: COMPREHENSIVE PREPAREDNESS GUIDE (CPG) 101 1-1 (Version 2.0, 2010) [hereinafter COMPREHENSIVE PREPAREDNESS GUIDE (CPG) 101].
60 *See, e.g.*, NAT'L ASS'N OF SARA TITLE III PROGRAM OFFICIALS, EPCRA THROUGH TIME (WHAT SHOULD BE OUR EXPECTATIONS OF LEPCS) 3 (2010) (describing guidance from the Colorado Emergency Planning Commission directing LEPCs to engage in community-wide planning efforts).
61 UNITED NATIONS ENV'T PROGRAMME, AWARENESS AND PREPAREDNESS FOR EMERGENCIES AT LOCAL LEVEL 46 (2d ed. 2015).

The success of community planning, however, is contingent upon the LEPC communicating with, educating, and training community members prior to an incident.[62] LEPCs may establish such beneficial communications by including community members in emergency planning and by distributing informational materials to community members.[63] FEMA provides a laundry list of information that can aid LEPCs in creating plans and educating the community.[64] Although LEPCs may face community disengagement until after an incident occurs, methods of increasing community participation include:

- Involving local agencies which, in turn, engage community members;
- Creating a website to provide educational materials, including training schedules and informational videos; and
- Utilizing social media to illustrate the value of the LEPC to the community and to communicate real-time updates in an emergency.[65]

V. CONCLUSION

As climate change creates new hazards and contributes to actual incidents, LEPCs may likely find it necessary to integrate the evolving hazardscape into their emergency plans. To prepare communities for climate change:

- LEPCs should utilize the EPA's process to identify and assess climate change risks;
- Facilities should recognize their legal duty to identify and adequately prepare for risks, potentially including those resulting from climate change; and
- LEPCs should prepare the community by communicating with, educating, and training community members before an incident.

To facilitate these actions, LEPCs may be eligible for grants, including grants under the Homeland Security Grant Program and Emergency Management Performance Grants.[66] Additionally, school districts, hospitals, and other special population centers may be eligible for emergency planning grants that can support the efforts of the LEPC.[67] To inquire about grant availability, LEPCs should contact the State Grants Coordinator through the State Emergency Management Office.[68]

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[62] *Id.* at 50.

[63] *See* COMPREHENSIVE PREPAREDNESS GUIDE (CPG) 101, *supra* note 62, at 1-1 (advocating for emergency planning that involves the whole community); *see also* UNITED NATIONS ENV'T PROGRAMME, *supra* note 64, at 51–52 (advocating for community-wide distribution of an emergency preparedness brochure).

[64] https://www.fema.gov/emergency-managers/national-preparedness/climate-change

[65] Ashley Moore, *LEPC 101: How Do You Get Your Community Involved in Your LEPC?*, INT'L ASS'N OF FIRE CHIEFS BLOG (Feb. 17, 2020), https://www.iafc.org/blogs/blog/iafc/2020/03/13/lepc-101-how-do-you-get-your-community-involved-in-your-lepc.

[66] CONTINUITY GUIDANCE CIRCULAR, *supra* note 6, at 35.

[67] U.S. Envtl. Prot. Agency, *Module 1: EPCRA Sections 301, 302, and 303: Planning for Chemical Emergencies, Lesson 5: Section 303 — Comprehensive Emergency Response Plans*, EPCRA TRAINING FOR STS., TRIBES, LEPCS, LOC. PLANNERS, & RESPONDERS (NON-SECTION 313), https://www.epa.gov/epcra/epcra-training-states-tribes-lepcs-local-planners-and-responders-non-section-313 (last visited June 8, 2020).

[68] *Id.*