

# Closing Chemical, Radiological, and Nuclear Gaps in Public Health All-Hazards Preparedness: Exploiting Lessons Learned from Past Chemical and Radiological Events

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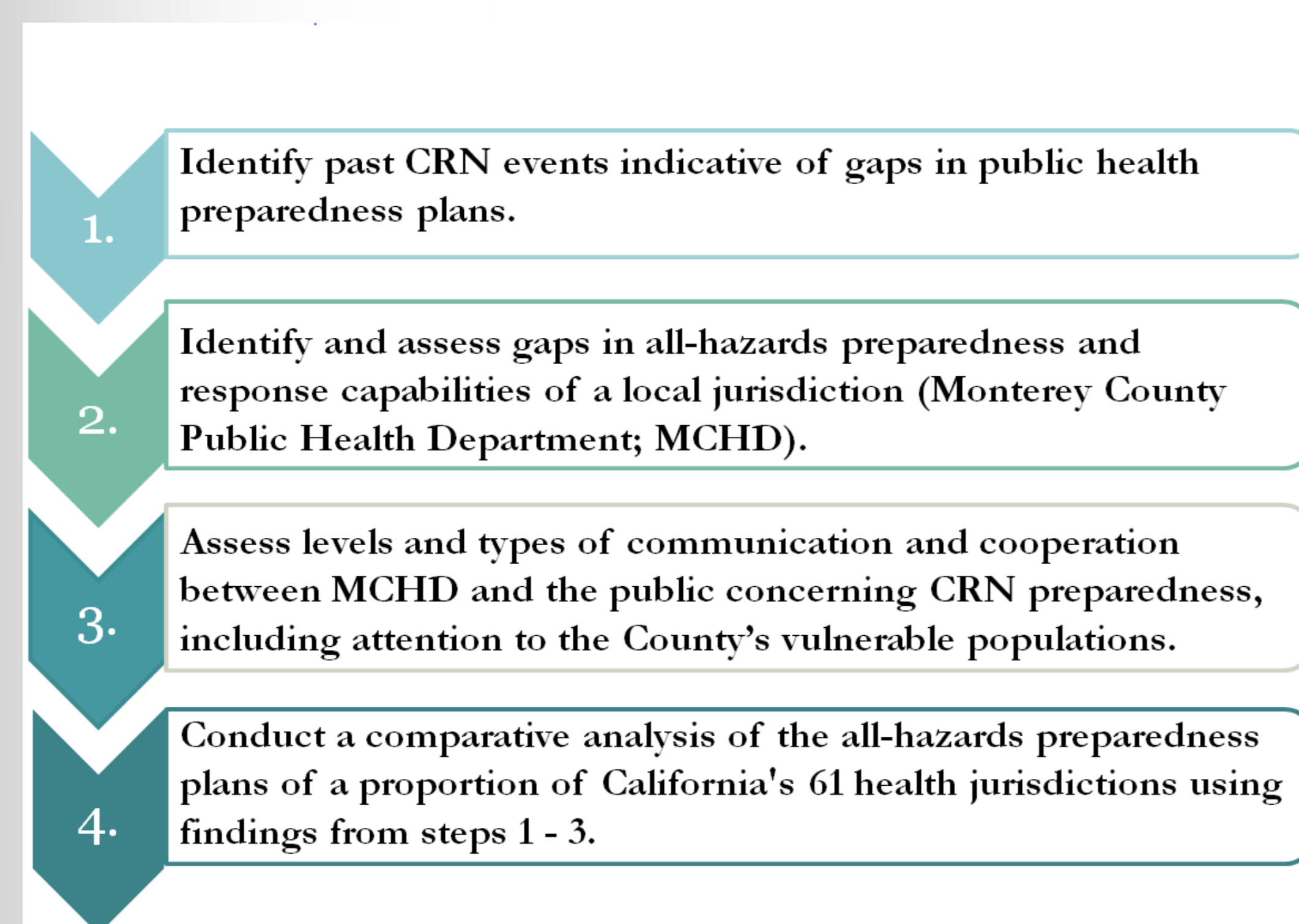
## Introduction

Chemical, radiological and nuclear (CRN) emergencies pose unique and difficult preparedness challenges for public health jurisdictions. Our research seeks to develop practical solutions, training materials, and tools local and state public health practitioners may implement to close gaps related to CRN responses in their all-hazards preparedness plans.

## Objectives

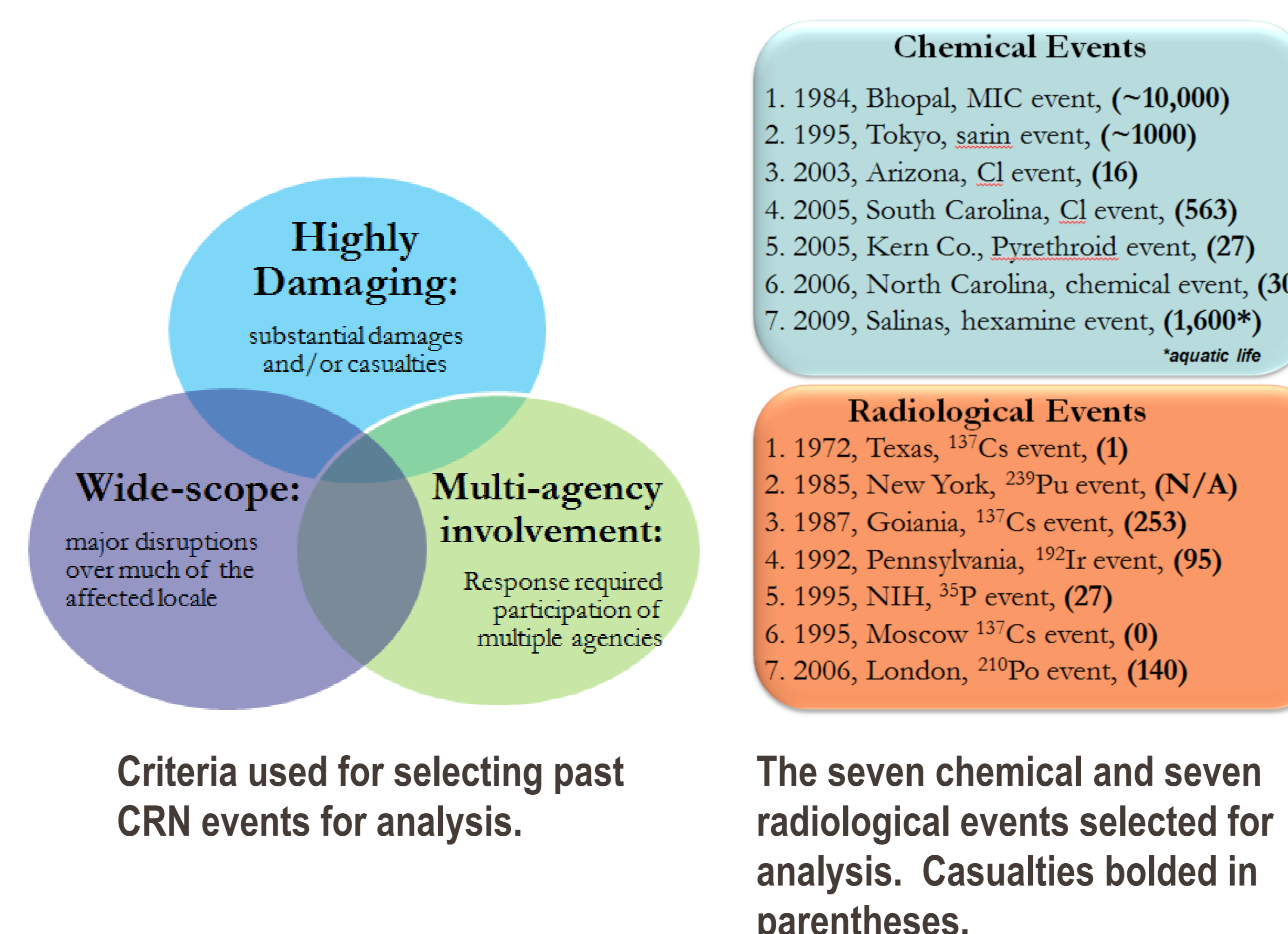
- To analyze past CRN events for the purpose of identifying individual attributes that affected emergency response activities, especially those that highlighted "gaps" in preparedness planning
- To elicit public health experts' perspectives on the importance of each gap with respect to their own agencies' preparedness and response strategies
- To develop real-world, practical recommendations that will close CRN preparedness and response gaps at the local, state, and national levels

## Methodological Approach



Our 4-step methodological approach for assessing CRN emergency preparedness plans.

## Results



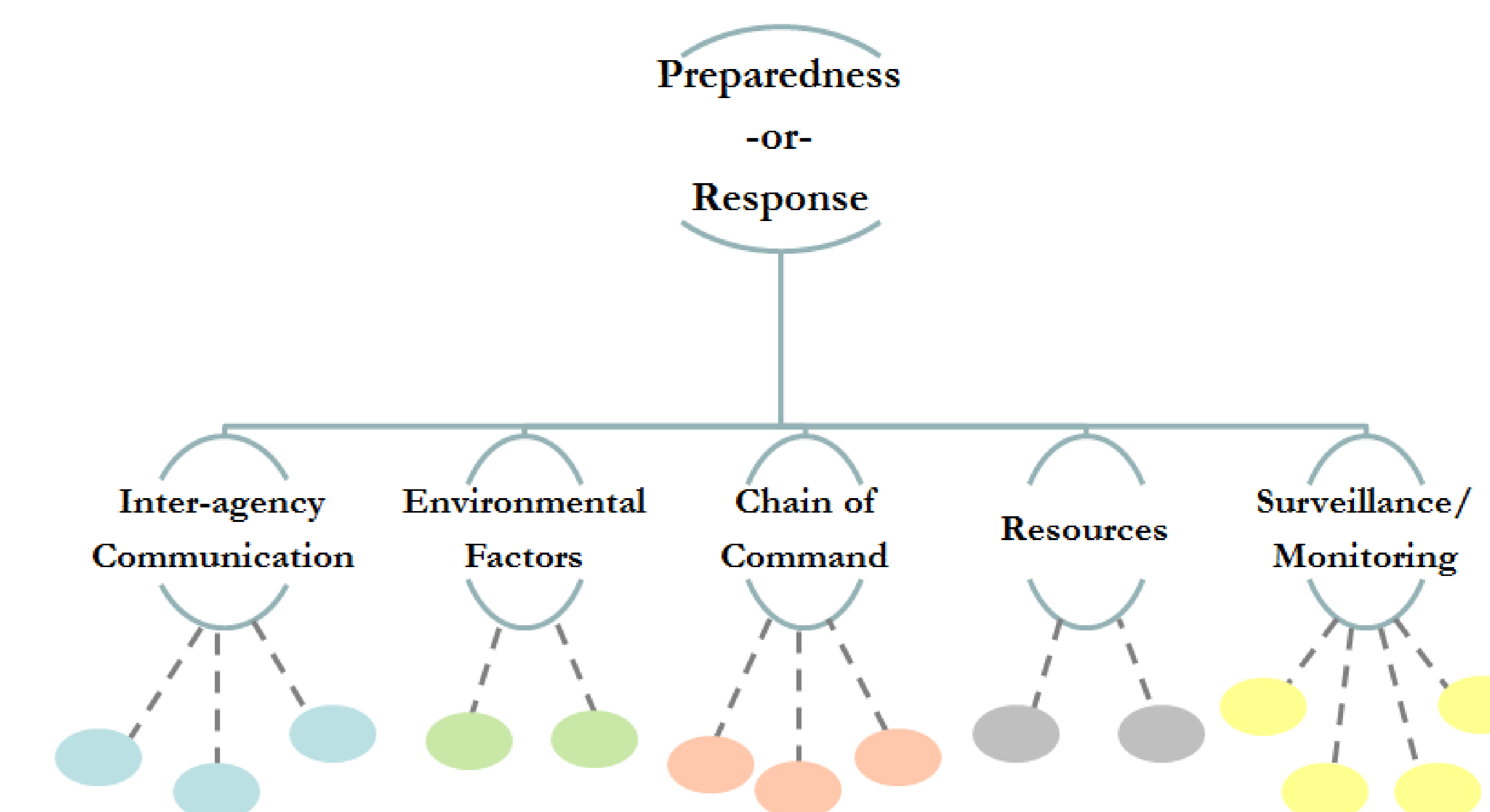
Event Stage	Attributes That Commonly Performed Poorly (Gaps)	Chemical Events	Radiological Events
Preparedness	Awareness prior to event of potential for worried well	X	X
	Agent detection sensors emplaced & properly maintained	X	X
	Appropriate detectors to delineate event scope are in place	X	X
	Awareness prior to event of vulnerable population needs	X	X
	Awareness of risks of coincident events that could influence an event's severity	X	X
	Relevant regulations properly implemented and enforced		X
	Adequate responder training provided prior to event		X
Response	Medical staff trained to perform correct diagnoses		X
	Proper attention accorded vulnerable populations	X	X
	Incident scope accurately determined	X	X
	Proper Personal Protective Equipment (PPE) used	X	X
	Proper accounting of weather conditions during event	X	X
	Victims correctly diagnosed in timely fashion		X
	Responders cognizant of relevant regulations		X
	Regulations properly enforced and implemented during event		X

A representative subset of the 50 most common attributes found from analyses of 14 past events involving CRN materials.

We currently are seeking **public health expert perspectives on the relative importance** of each attribute if a local or state jurisdiction was challenged by real life CRN events.

To systematically analyze experts' perspectives, we are using a 2-stage modified **Analytical Hierarchy Process (AHP) survey tool**:

- Stage 1:** Public health experts "weight" the importance of overarching preparedness gap factors (below).
- Stage 2:** Experts weight 50 individual attributes indicative of CRN preparedness and response gaps under these factors.



Hierarchy depicting preparedness and response factors for expert analyses via a modified AHP survey tool.

## Conclusions

Our preliminary findings are informing and influencing the development of 2 readily-adaptable tools test agencies' all-hazards preparedness:

- Table-top exercises (TTXs) to test public health professionals' and emergency responders' readiness to respond to CRN events
- An online AHP survey tool to help public health agencies prioritize and fill gaps in their all-hazards preparedness plans.