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Chemical Facility Anti-Terrorism Standards in Washington

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Walden University
2021

Abstract

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MPM, University of Maryland, 2005

BS, University of West Florida, 1997

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

The federal government created the Chemical Facility Anti-Terrorism Standards (CFATS) program in 2007 to keep terrorists from weaponizing hazardous chemicals. The CFATS program did this by targeting high-risk chemical facilities and adding additional regulations, but this has added an additional burden on the Local Emergency Planning Committee (LEPC) that could negatively impact their capacity to prepare and collaborate to prevent chemical disasters. The present study was conducted to evaluate the CFATS program from the perspective of LEPCs to fill an existing gap in the literature. The study was conducted using the theoretical frameworks of contingency theory of organizations by Donaldson, and organizational culture theory by Shafritz et al., and employed Bamberger and Mabry's qualitative evaluative approach methodology for its analysis. The research questions asked what programmatic and organizational changes could be made to the CFATS program to better protect regulated chemicals and high-risk chemical facilities. The research sample consisted of 11 LEPCs that identified what changes could improve the CFATS program in the State of Washington and what organizational changes would also improve the program. Findings included greater LEPC participation, more chemical security inspectors, grant funding, and incident management support. This study evaluated the data in the context of time, budget, data, and political constraints to provide prioritized options the CFATS program could incorporate to further protect high-risk chemical facilities and increase community preparedness for chemical disasters leading to positive social change.

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Dedication

I dedicate this work to the many professionals who are emergency managers, contingency planners, first responders, technical specialists, academia, public servants, and others who dedicate their time to specialize in chemical safety, response, preparedness, mitigation, and security programs to keep our communities safe.

Lastly, I must dedicate the effort and achievement to family. I dedicate this effort to my wife, Theresa, for all her support while I worked on this degree with its seemingly endless hours of courses, writing, and research often locked away in my office missing numerous family activities and events. In addition to the effort, I dedicate this achievement to my son, Chris, and granddaughters, Willow and Aurora, so that they are inspired and realize it is never too late to pursue their goals and make a difference in the world.

Acknowledgments

I would like to sincerely thank my committee of Dr. Paul Rutledge as my chair, Dr. David Milen as the second committee member, and Dr. Chris B. Jones as the URR. Additionally, I would like to acknowledge my prior chair, Dr. Donald McLellan, with whom I started my dissertation process years earlier. Lastly, the staff at Walden University who guided and supported my efforts along with my success advisor who championed my effort through the program, Ms. Catherine Heck.

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Chapter 1: Introduction to the Study

In the 20 years since the 9/11 terrorist attacks on the United States, a lot has changed on the political, cultural, and even global stage. How these changes translate to continued security and safety adjustments in a local community continues to evolve. Two decades ago, not a single branch of government had the primary mission of domestic security to defend the nation against a terrorist attack (Kean & Hamilton, 2004). Many things changed with the creation of the U.S. Department of Homeland Security (DHS) shortly after the 9/11 attacks and with subsequent domestic security policies such as the issuance of Presidential Policy Directive / PPD-8 released from the White House that ordered DHS to develop a national preparedness system in coordination with other federal agencies and in consultation with local governments (The White House, 2011). Moving the clock forward to today, it is necessary to continue to adapt to threats, and arguably one of the most significant threats in most American communities is the threat of a chemical disaster, whether its cause could be human error, mechanical, or manmade. On the intentional side, more than half of all terrorist attacks globally over a 55-year period used some sort of chemical to facilitate the attack because chemicals are more readily available and make a big impact (Zhu et al., 2020).

The potential for chemical attacks is very real, and the results can be devastating. A few notable chemical disasters include the 2018 Syrian chlorine attack that killed dozens and injured hundreds, a 2019 chemical plant explosion in Texas at a plant that caused thousands to evacuate, and a 2020 poisonous gas release in Louisiana that put an entire community on shelter-in-place orders (Anderson, 2021). Rural communities are not

immune to these large chemical company disasters, as shown in the April 17, 2013, explosion at a fertilizer company in a small town of West, Texas. In that rural community with only a few thousand residents, 15 people died, and nearly 300 were injured when tons of ammonium nitrate used as fertilizer detonated during a fire at the facility (Cutchen, 2020). These are just a few chemical-related disasters that seem to grow more prevalent, leading to the question of how communities can prepare and what the DHS can do to help that effort.

In response to this concern, a program was created under what is now the Cybersecurity and Infrastructure Security Agency (CISA), referred to as "the nation's first regulatory program focused specifically on security at high-risk chemical facilities" (CISA, 2020, p. 1). The program was enacted in 2007, as detailed by Shea (2016), to address the threat of terrorists using certain industrial chemicals to harm Americans called the Chemical Facility Anti-Terrorism Standards (CFATS) program. This federal regulation was enacted to identify high-risk chemical facilities and require them to mitigate their vulnerabilities. However, adding another regulatory program to an already heavily regulated industry comes with challenges, such as how it fits in with the many other overlapping regulatory programs (Anderson, 2021). Understanding how the CFATS program contributes to reducing the threat, risk, or vulnerability in local communities is key to its success.

This chapter provides an overview of the issue with a background of why studying the CFATS program from a community level is important and why studying the Local Emergency Planning Committee (LEPC) was chosen as the target population to

conduct this study. This section provides amplifying information on chemical security and addresses the problem statement in more detail, the purpose of conducting the study, and the research questions. To frame the study, this section also provides details on the theoretical framework and nature of the study as well as some key definitions. Lastly, I discuss assumptions related to the study, the study's limitations, its significance, and a summary of the content found in the chapter.

Background

In April 2013, a small rural community in West, Texas, experienced a devastating fire and catastrophic detonation of ammonium nitrate used as fertilizer that leveled the surrounding area. The explosion killed a dozen emergency responders and injured hundreds of others in the vicinity (Cutchen, 2020; Tinney et al., 2016). This incident set off a number of efforts at the federal level to keep something similar from happening again, including new regulations, advisories, and working groups proposed by the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF), and arguably the most important policy, a Presidential Executive Order in August of the same year titled "Improving Chemical Facility Safety and Security EO 13650" (Cutchen, 2020, p. 2). The EO 13650 mandated improvements to coordination between federal agencies, first responders, and state, local, and tribal organizations, specifically mentioning local and tribal emergency planning committees and sharing of information to help them "prevent, prepare for, and respond to chemical incidents" (The White House, 2013, p. 2). This order from the White House tasked the EPA, Department of

Labor, and DHS to work together to coordinate information sharing and find ways to prevent something similar from happening again.

Per a report of the West, Texas fertilizer explosion produced by the Chemical Safety Board, the investigators found that at the time of the explosion, there were no regulations in place that would have effectively prevented the incident, although there were several of them that had pieces, components, or closely related regulations (Cutchen, 2020). It is also important to note that the same report stated that the ATF did not rule this incident as an intentional arson event until May 11, 2016, 3 years later. This pivotal case demonstrated the complex regulatory system that shares space with EPA, OSHA, ATF, Department of Transportation (DOT), and other agencies, all for a single fertilizer company, in this example, in a very small rural community. While the LEPC likely knew about the type and quantity of ammonium nitrate at this facility, the question remains if the LEPC could have been better prepared to prevent something like this. This is the significance of this research, revealing that another study on one of the many agencies and their complex regulatory programs with its many exclusions and exceptions is not the gap but studying what the LEPC could have done or could do today with the help of all these federal programs needs to be addressed. This gap in knowledge is the foundation of the research problem I addressed in this study for LEPCs in the State of Washington.

It is unclear what the local community body of excellence should be consulted to better understand this issue. There are limited studies on how LEPCs are the body of government established by federal law to identify dangerous chemicals in a community

(Whitney & Lindell, 2000), so to broaden this understanding, the LEPCs were chosen to be the sample group of the study. This decision was supported by literature from the federal CFATS program that assigns the LEPC coordination role to the regulated chemical facility under what it defines as "metric 9.4 outreach" (CISA, 2009, p. 143). As such, there is a solid link between the LEPC and the CFATS program even though it appears to be secondary or through the regulated industry partner and not necessarily direct. This is another area in which I aim to contribute to further understanding to fill in this gap.

The literature on the CFATS program is sporadic at best, so I looked at the materials holistically, going back over 10 years to frame the existing knowledge adequately. For the CFATS program itself, this was deemed adequate as the CFATS program itself has changed very little since its first implementation in 2007. Diaz (2007) argued for regulating the chemical industry back when the program was first being debated in Congress. Moreover, Kornegay (2008) explained how the CFATS required certain companies to meet DHS requirements, including completing a security vulnerability assessment and a site security plan and submitting to periodic visits by inspectors from the DHS. Regarding the performance of the CFATS program, Currie authored a report by the U.S. Government Accountability Office (GAO, 2018) and highlighted concerns about how it is disjointed among various other components also under federal purview. Coburn (2014) authored a report for the U.S. Senate Homeland Security and Government Affairs Committee titled "Chemical Insecurity" that described

many purported failures and shortcomings in the CFATS program, stating that its risk calculations were “riddled with problems (p. 11).

There were articles that addressed how the CFATS program overlapped into other programs, not just under DHS but other agencies and departments as well. For example, Anderson (2021) discussed in detail how the CFATS program overlaps into missions already being done by other agencies such as the ATF, Transportation Security Administration, DOT, U.S. Coast Guard, and the EPA. Another researcher cited conflicts with the DOT’s Pipeline and Hazardous Materials Safety Administration where inspectors from DHS prevented the facility from giving required materials to inspectors from DOT, putting the facility in an awkward position (Coburn, 2014).

Johnson and Brown (2013) looked at chemical security from a mitigation perspective using past disasters to show how spatial modeling is a crucial component to reduce risk through distancing and isolation. Along these same lines, another GAO report noted how CFATS requires facilities to develop emergency response plans to security incidents with engagement from emergency responders and law enforcement and compares that to how the more recent America’s Water Infrastructure Act mandates coordination for the development of its risk assessments with local emergency response planning committees (Anderson, 2020). Moreover, Qin et al. (2020) brought in the topic of incident management discussion to chemical security as they discussed the impacts of chemical facilities in Texas following Hurricane Harvey that occurred in 2017 but only noted the Coast Guard and a Texas environmental agency, no mention of LEPCs or the CFATS program. Kaelin (2014) brought in another area that overlaps chemical security

with the worker safety programs under OSHA's authority with process safety standards. Kaelin used a specific case study of a 2013 fertilizer plant explosion in Texas to discuss changes to the handling and storage of hazardous materials, but there was no mention of LEPCs or the CFATS program.

The current research addresses the CFATS program as far as its understanding, how it is implemented, and areas where it could be more transparent, but I do not address the gap in emergency planning, preparedness, and how it integrates at the LEPC level specific to the CFATS program. The questions remained if the program should have a greater incident management or emergency response role and if it adequately integrates into the local community to help them prepare or be given expanded roles and authority to augment the efforts of LEPCs. This study was needed to address these questions to fill in the gap in the literature on the topic. This data ultimately contributes to the body of knowledge of CFATS and LEPCs in the State of Washington.

Problem Statement

The problem this study addressed is the gap that existed between the role of the LEPC and the CFATS program in the effort to make communities safer. The purpose of the CFATS program to "reduce the risk that certain hazardous chemicals are weaponized by terrorists" (CISA, 2020, p. 1), and the purpose of the LEPCs in Washington is to improve "state and local hazardous materials emergency response capabilities" (Commission, 2017, p. 3). The study of the relationship between these two programs addressed this existing gap in literature.

Current literature and published national policies seemed to align in their overall goal of keeping citizens safe from disasters such as the 2013 West, Texas ammonium nitrate fire and explosion that killed a dozen emergency responders plus several citizens and injured hundreds in the small rural community (Cutchen, 2020). At the local level, the LEPC informs communities and even state counterparts what dangerous chemicals are stored or transported within their areas in their communities, and at the federal level, a national policy states that the federal government's "most sacred responsibility is to keep the American people safe from those who would do us harm," citing examples including terrorist use of chemicals to make weapons of mass destruction (White House, 2018). The federal government itself recognized that this issue is current and needs to be studied, calling the current domestic chemical defense program "fragmented and not well coordinated" (GAO, 2018, p. 14).

A possible cause of this problem is the disjointed way in which the national chemical security program is implemented, with so many agencies having overlapping roles. In the federal government alone, there are at least seven federal agencies having regulatory oversight over some portion of chemical security antiterrorism regulations (Anderson, 2021; Coburn, 2014). Within just the DHS, there are six different components of this one agency that have distinct chemical antiterrorism roles in preventing and detecting chemical-based terrorist attacks (GAO, 2018). This complexity of ownership can present confusion, conflict, and many inefficiencies.

I posited that a study that looked at the CFATS program from the LEPCs in Washington using an evaluative approach, as described by Bamberger and Mabry (2020),

would contribute to a more comprehensive understanding of these complexities, overlaps, and inefficiencies. The CFATS program is becoming an increasingly significant issue in academia and in public policy, making it more important to study (Chekouras, 2007; Coburn, 2014; Diaz, 2007; "Environment and the Economy Subcommittee discusses critical chemical security program: witnesses voice support for long-term extension of CFATS program and urge passage of bipartisan reauthorization bill," 2011; "The Future of CFATS," 2009; GAO, 2018; Goodman, 2011, 2014; "ILTA voices concerns with CFATS," 2020; Jo, 2010, 2014, 2019, 2020; "United States: Environment and Climate Change Subcommittee announces markup of CFATS and HFCS legislation," 2020; Zhang & Reniers, 2018).

With the U.S. Congress extending the CFATS program in 2020 (States News Service, 2020) for an additional 3 years, this research is timely and appropriate. In order to address these gaps and needed changes, it was necessary to understand the LEPCs perspective in the discussion of how the CFATS program worked or did not work in the midst of the many other regulatory programs at the federal, state, and local government levels. This knowledge contributed to understanding where the program conflicts with other rules and identified opportunities to synergize with other chemical security regulations and initiatives. To accomplish this, I used an evaluative approach, the “seven steps of real world evaluation” by Bamberger and Mabry (2020, p. 7), to contribute to the body of knowledge in the context budget, time, data, and political constraints that have significant impact as to what LEPCs can do and what the CFATS program can provide.

Purpose of the Study

The purpose of this research was to explore the relationship between the CFATS program and the LEPCs across the State of Washington to fill in the gap on how the CFATS program may or may not be effectively contributing to community preparedness for a chemical attack. There was a clear gap in the academic literature on this topic as previous analyses (Anderson, 2021; Caldwell, 2014; GAO, 2016, 2018) evaluated the CFATS program at the federal level regarding challenges with its implementation, how it was performing to meet certain national metrics, and how it overlapped into many other preexisting federal programs. In this study, I looked at the CFATS program from the perspective of the LEPCs because these groups dealt with many of the other chemical regulatory agencies and programs and had the potential to contribute significantly to the understanding of the program. To fill the gap or contribute to its understanding, I employed Bamberger and Mabry's (2020) evaluative approach for methodology using the contingency theory of organization (Donaldson, 2001) and the theory of organizational culture (Shafritz et al., 2005) to frame the discussion. This increased understanding helped fill the gap in the literature.

Research Questions

Research Question (RQ)1-Qualitative: What changes to the CFATS program should be made to promote greater mission effectiveness to protect regulated chemicals in the State of Washington?

RQ2-Qualitative: How could organizational changes improve how the CFATS program protects high-risk chemical facilities in the State of Washington?

Theoretical Framework

The theoretical frameworks employed in this research followed Donaldson's (2001) contingency theory of organization and the theory of organizational culture (Shafritz et al., 2005). The contingency theory was used as the lens to evaluate both the LEPCs and the CFATS program. These programs were evaluated in the context of their steady-state normal day-to-day operations and separately in the context of a disaster with more chaos added into the system. In the latter environment, organizational structure is less important, centralized power fades, and personal traits of initiative and leadership take the forefront in a less organized and controlled environment. Contributing to this theory was the organizational culture theory that helped reveal why some groups likely work more harmoniously together, and others do not. If one's identity is shaped and formed along with the identity of the organization or the other way around, that could contribute or hinder the natural bonds of inspectors from the EPA, DHS, ATF, and DOT, for example. This theoretical framework helped clarify and explain how LEPCs transition from crisis to monotonous routine and back again episodically, and this helped explain why such an organization has different needs than many other businesses or other government offices.

Nature of the Study

The nature of this study was an evaluative approach for methodology, as detailed extensively by Bamberger and Mabry (2020), centered on the CISA within the DHS. Within the CISA agency structure, I focused on the Office of Chemical Security that manages the CFATS program, specifically in the State of Washington. Bamberger and

Mabry indicated there were seven key steps for evaluation that included context, purpose, budget, time, and data constraints, and these key factors provided the structure for the data sought.

Definitions

To guide the understanding and allow for proper context of the lexicon used in this study, the definitions used throughout the text were consolidated and are defined here for reference to allow the reader to quickly understand how these terms were used in this specific public policy analysis.

Chemical Facility Anti-Terrorism Standards (CFATS): This refers to the federal regulatory antiterrorism program for high-risk chemical facilities as defined by the CFATS Act of 2014 (CISA, 2020).

Cybersecurity and Infrastructure Security Agency (CISA): This is the agency that manages the CFATS regulatory program addressing security at certain chemical facilities (CISA, 2020).

Department of Homeland Security (DHS): For this context, the Cybersecurity and Infrastructure Security Agency is part of DHS (CISA, 2020).

Facilities: This term is used extensively in this research and is taken directly from the CFATS federal regulation itself and broadly refers to any entity that the CFATS program has, or presumptively has, oversight of due to that entity's possession of certain chemicals over a specific amount, (e.g., pounds) or concentration, as identified in the regulation (CFATS, 2020). This is a significant interpretation as under this broad

definition, a "facility" could refer to a large chemical plant or a very small country store in a rural community.

Local Emergency Planning Committee (LEPC): The LEPC in this context refers to the 43 LEPCs in Washington that collaborate "with their respective local emergency management offices, conduct hazard identification, vulnerability analysis, and risk assessment activities for their jurisdictions," according to Washington's Emergency Management Division (Emergency Management Division, 2021).

Preparedness: In the context of a public policy discussion, the formal interpretation is used for preparedness, referring to the whole of a government approach for "strengthening the security and resilience of the United States through systematic preparation for the threats that pose the greatest risk to the security of the Nation, including acts of terrorism, cyber-attacks, pandemics, and catastrophic natural disasters" (The White House, 2011).

Top screen: This is part of the CFATS determination process where, "facilities possessing a chemical of interest in quantities above the screen threshold quantity submit a Top-Screen" as part of the determination process to see if the chemical facility will be regulated under the CFATS program (Shea, 2016, p. 158).

Assumptions

This study was based on three key assumptions regarding engagement with the LEPCs in Washington. First, I assumed that the vast majority of functional LEPCs in Washington still address chemical safety and security as their primary mission and have among its membership representation from groups such as emergency management, a

local fire department, one or more of the chemical industries in the community that must report its chemical holdings to the LEPC, and other members with unique contributory roles (e.g., police, concerned citizens) either formally via charter or informally. The term *functional* relates to the second assumption in that I assumed that not all 43 listed LEPCs in Washington were actually meeting or had a functioning committee, whether that be due to lack of interest, competing interests with other issues (e.g., public health), duplication of effort in other groups, or any number of reasons. The third assumption was that not every LEPC has regulated CFATS chemical facilities in their community but that these LEPCs still prioritize the safety and security of the chemicals in their communities.

Scope and Delimitations

The population invited to participate in this study was drawn from the State of Washington and only sources from LEPCs or directly related to a LEPC at the chairman's discretion. While there are lobby groups and national organizations that have spoken on the CFATS program in the past, this study had limited its scope to the 43 names publicly available for those in charge of LEPCs in Washington. This target group was done to specifically contribute to the gap in the literature related to LEPC input on how the CFATS program is or is not functioning specifically in the State of Washington. The listed contacts were encouraged to share the invitation within their membership and that could include national-level participants, state or federal contacts, or other contributors, but these would likely be the same resources the LEPC would call upon for other challenges or questions in their volunteer roles. As such, such extensions of the invitation to participate in the study were considered acceptable.

Limitations

A potential limitation to the study was expected to be obtaining adequate and geographically diverse participation in the anonymous online survey. LEPCs are made up of volunteers, and many members have other full-time jobs and many competing obligations and likely get frequent solicitations. Another limitation might have been equitable representation from the smaller and more rural LEPCs that did not have as robust membership that a similar group in a large city might have, such as in Seattle or Tacoma areas. The challenge to promoting feedback and participation in data collection is the sensitivity of the subject matter because it is primarily an antiterrorism program, and this might lead some to be reluctant to provide responses.

Significance

The significance of this research is twofold: A more in-depth analysis was needed to evaluate the efficacy of the CFATS program to support Congressional policy review before its expiration in 2023, and secondly, it is a responsibility of the government to protect its citizens, so researching the effectiveness of its chemical security antiterrorism policies was pertinent to that obligation. From that charge, I aimed to fill a gap in the literature that has not taken into account the expertise of the LEPCs. Most, if not all, communities in the United States have dangerous chemicals that terrorists could use as weapons, whether fertilizer as a precursor to make a bomb or chlorine that could result in a toxic gas cloud over neighborhoods. LEPCs address chemical hazards in communities, as required by law (Whitney & Lindell, 2000), but there appeared to be a lack of engagement about what these groups would recommend and bring to the discussion as

concerns related to a chemical security program such as CFATS. While many federal laws dealing with industrial chemicals are long-term or permanent, the CFATS program will most likely be renewed, extended, or permanently authorized in 2023 when its current temporary authorization runs out. As a result, I hope to contribute to and reduce this gap in knowledge, which could result in safer communities.

Summary

This chapter provided the foundation for the study of the CFATS program by identifying the gap in knowledge from the LEPCs on chemical security and addressed the purpose of the study. To narrow the scope of the study, I presented the research questions and the theoretical framework of contingency and organizational culture theories using an evaluative approach. A few definitions were added to communicate their use in this specific study, and assumptions and limitations were provided. The next chapter continues with a comprehensive overview of existing literature and key government reports on the CFATS program. The detailed review of literature establishes current content and identifies the gap in literature where this study makes its contribution to further the understanding of the CFATS program from the view of LEPCs in the State of Washington.

Chapter 2: Literature Review

Introduction

This section addresses the depth and breadth of current literature related to this study. The study addresses a chemical security regulatory program of the DHS titled the CFATS program. The literature sought for this study included an emphasis on the most recent information related to CFATS, recommended changes to the program, articles that discussed it from various lenses to include incident management and preparedness, overlap into other regulatory programs, and articles that provided critical analysis and change recommendations. The primary purpose of this literature review was to find the gap in research involving both LEPCs and the CFATS program to center the study and ensure the research appropriately contributes knowledge to that gap.

Literature Search Strategy

The literature search for this study began with the theoretical foundation. To find the appropriate theoretical theorists or theories, the Walden University Library was used to research theorists appropriate for this study. The library recommended the use of the Thoreau Multi-Database Search to locate articles on the applicable theoretical framework. Primary sources were obtained through this manner, and then once key theories and authors were identified, other sources were used to expand upon the search that are listed below.

The search for articles supporting this study started in a similar manner with a very broad search using the Walden University Library's Thoreau database to locate articles and then expanded to other sources by topic, journal, and authors using the

variety of resources offered by Walden University's Library that include the sources listed below. Academic articles that establish the basis of this study were identified with the following keywords: *chemical security, chemical insecurity, CFATS, Chemical Facility Anti-Terrorism Standards, chemical facility security, industrial chemical security,* and *chemical antiterrorism*. Sources for the articles originated from the Thoreau multi-database, Homeland Security Digital Library, Military and Government Collection, Public Administration Abstracts, Sage Journals, and Google Scholar.

Due to the limited number of recent articles, additional sources were also used to include government databases and Congressional testimony. The specific resources searched originated from the Walden University library using subject research for Public Policy and Administration, Thoreau search, Academic Search Complete, ERIC, Gale Academic OneFile Select, Gale OneFile: LegalTrac, govinfo, Military and Government Collection, the National Science Foundation, SAGE Journals, SAGE Research Methods Online, and SocINDEX with full text. Other databases outside of Walden University's library included Google Scholar, reports directly from the U.S. Government Accountability Office, and government documents that included federal regulations, testimony from sessions of the U.S. Congress, and Executive Orders from the White House.

Theoretical Foundation

The theoretical foundation for this study was Donaldson's (2001) contingency theory of organizations. The contingency theory of organizations was selected because I evaluated the effectiveness of a public sector organization, a component of the DHS, that

manages the CFATS program, as described by Shea (2016). I also looked at LEPCs in how they engage or used the CFATS program, and both studies were evaluated both from a steady-state or normal operations tempo and from a theoretical crisis mode where they are in a contingency mode as the needs for interaction and resources would arguably be very different in those two stages. Contrasting these two operating environments helped further enrich the understanding of that shared space between the two programs using the contrasting conditions. The supplemental theoretical framework chosen for this analysis was organizational culture theory (see Shafritz et al., 2005) that furthered the understanding of both programs as it viewed the issue through the lens of the individual's innate cultural characteristics that might have contributed or competed against its own success.

The primary foundation of the contingency theory of organizations, as described by Donaldson (2001), along with other theorists in this field, provided the context of analysis that was used in this study. Sayilar (2016) provided an in-depth background on the structural contingency theory with its history, present-day interpretations, and where it might evolve in the future as a field of study. Negandhi and Reimann (1972) posited that how an organization performed was based primarily on its external environment. The external environment was further explored by Greenwood et al. (1975), who theorized that "organizational characteristics have to be shaped to meet situational circumstances," and this study was complemented by Ketokivi (2006), who emphasized flexibility strategies Hinings et al. (1975) went further to propose new variables of differentiation and integration that referred to the specialization of positions and the level of

collaboration with other authorities to potentially synergize efforts in a resource-constrained environment.

Other theorists have looked at the actual structure and organizational context of a business to assess its strengths. Pitts (1980) presented the contingency theory of multibusiness organization, where benefits and shortfalls of business expansion are balanced between common business practices shared across more autonomous divisions within an organization that would help it perform (p. 204). Burt et al. (1994) discussed a contingency theory of structure and performance, and this dove more deeply into the inner structural workings to unwrap the characteristics of centralized and decentralized efforts, internal and external efforts, formalization of process, and increased specialization of positions (pp. 15-17). Tomaskovic-Devey and Risman (1993) expanded on the contingency theory and focused their efforts on labor process changes to study the impacts of telecommuting. Senge (2013) further advanced the contingency theory of organizations with what he called new institutionalism that brought society and culture back into the discussion.

The second part of the theoretical foundation shifts the focus slightly from the structure of the organization performing the task to the actual people within that organization and how that impacts efficacy. The organizational culture theory, according to Shafritz et al. (2005), is the "intangible phenomena, such as values, beliefs, assumptions, perceptions, behavioral norms, artifacts, and patterns of behavior" (p. 352), and I posited that this would play a significant factor in this study. Other theorists expanded on this theory, including Landis et al. (2014), with their focus on leadership

style, and Levitt et al. (1999), who studied project teams and their limiting factors. Burt et al. (1994) dove into organizational culture impacts on business performance. Shepard and James G. Hougland (1978) brought the focus back onto the individual with their emphasis on what they called the complex man approach that tried to account for one's "need for autonomy or self-actualization" (p. 414). Chaudhry (2020) wrapped up this section by focusing on enablers of change such as "inter-group collaboration, change communications, rewards and training program," among other key factors (p. 54). These theories set the stage for how the following information found in current literature related to the CFATS program that I evaluated in this study.

Chemical Security Antiterrorism Literature

The literature for this review fell into two broad categories: One being articles that addressed various needs for change to the CFATS regulatory program, and the second including articles that explained what the program was and how it worked. As this literature review served a purpose to provide relevant and current information to identify the research gap, a preference to include articles within the last 5 years for those that addressed specific regulatory changes was emphasized, unless older materials provided some clarity and needed background. Articles, reports, and Congressional testimony that otherwise supported the program, such as how it worked for context, were included with a 10-year cutoff, with few exceptions. After compiling the large number of articles, the topics were further grouped into subcategories summarized below.

In order to categorize the articles for further analysis, several broad categories were identified that helped place the materials into specific themes. The categories

included background articles that explained the program itself, those that related to mitigation (e.g., reduction of threat, consequence, or vulnerability), those that emphasized collaboration (e.g., stronger coordination with other agencies, the regulated community, and with related laws, regulations, and policies), and specific change recommendations to the CFATS program. As the CFATS program is a regulatory program, this last section also includes relevant Congressional testimony and government reports that spoke directly about specific changes to the regulation itself.

CFATS Regulatory Program Background

The CFATS regulatory program (CFATS, 2020) implemented by the DHS was created to restrict terrorists' access to dangerous industrial chemicals so they could not be used as weapons. With that in mind, the first notable review was of the "National Strategy for Countering Weapons of Mass Destruction" (White House, 2018) that states that the first strategic objective is to ensure "the agents, precursors, and materials needed to acquire WMD are placed beyond the reach of terrorists and other malicious non-state actors," and this was relevant for the conversation on CFATS as a chemical security antiterrorism program (p. i). Increasing the specificity on what specific chemicals had a history of use by terrorists, the National Academies of Sciences (2018) published a 200 plus page report on explosives, explosive precursors, and their use by terrorists domestically and internationally that contributed to the understanding of the chemicals the CFATS program regulates. In this context, the following articles emphasized mitigation theories directed at the CFATS program itself or the mission of mitigating the threat, consequence, or vulnerability of terrorists gaining access to specific chemicals to

inflict harm. Articles on the topic gave a more detailed background on the CFATS program and outlined some of its past struggles.

Several articles provided overviews of the CFATS program regarding types of companies it impacted, how they were regulated, what requirements they had to work with, and analyses of the process overall (GAO, 2016; Sadiq & McCreight, 2013; Shea, 2016). Shea stated that "the CFATS program has historically not met DHS-established deadlines" citing data claiming that "approximately 25% of facilities under CFATS remain in a state of preliminary risk-tier assignment" (p. 168), or "68% of the 3,900 regulated facilities still lack an approved safety plan," as stated in a related article ("US facilities slow to develop anti-terrorist plans," 2015, p. 13). The slow inspection rate concern and inadequate inspector training were also points raised by Sadiq and McCreight (2013, p. 400). A report from the GAO (2016) recommended a greater focus on the chemical facilities that had to submit data to the CFATS program, roughly 37,000, but that was not designated as high risk among the approximately 2,900 that did receive the DHS designation as high risk. Per GAO (2016), in the group of 34,100 facilities nationwide that submitted information to the CFATS program but did not get tiered under its toxic release security issue, there were misreported distances from the chemical to surrounding populations using its "distance of concern" (p. 174). As a result, recommendations from the GAO included improving distance data provided by facilities, creating a "documented process and procedures to track noncompliant facilities," and developing a better "performance measure that includes only planned measures that have been implemented and verified" (pp. 192-193). The next grouping of literature obtained

is grouped into the broad category of mitigating risks related to chemical security programs.

Mitigation

Khakzad and Reniers (2015) presented a theory that posited two significant changes that would mitigate the consequences of chemical facilities being attacked by terrorists. These two items included "inherently safer technologies (ISTs)" and "land use planning (LUP)" (p. 3). Per Khakzad and Reniers, the IST referred to five principles that would benefit both the safety and security of a chemical facility that included minimizing the number of the dangerous chemicals onsite to prevent access to terrorists, swapping out dangerous chemicals and processes with less dangerous ones where able, modifying processes to decrease volatility (e.g., lower pressures and temperatures), simplifying "design and process" to minimize complexity and potential for errors, and implementing building design and siting locations to purposefully mitigate effects of an attack (p. 3). The other item that Khakzad and Reniers referred to was zoning law restrictions, or LUP, where urban planning would zone industrial areas away from communities to minimize the consequences just through physical distance. They cited previous attacks on chemical plants to highlight the "vulnerability and attractiveness…as potential targets for terrorist groups" primarily because, as they defined them, chemical plants were "large inventories of hazardous materials including flammable, explosive, and toxic substances whose accidental or intentional (undesired) release could result in major fires, explosions, or dispersion of toxic gases" (p. 1).

Another key item taken from Khakzad and Reniers (2015) was the key distinction between safety and security, where Khakzad and Reniers agreed that while there was a significant overlap between safety and security programs, there were also distinct differences. To count them as inextricably linked actions such as their commonalities in "consequence analysis" would miss the key distinctions related to security found in "hazard analysis," according to Khakzad and Reniers (2015), where the hazard is a person with bad intent rather than a failed system, for example (p. 2). Khakzad and Reniers concluded that even though there may be much easier targets for terrorists to attack, chemical plants can help terrorists kill many people, and their greater impact would likely be on the "economy and functionality of governments" (p. 2). While these researchers focused on terrorist attacks on facilities, other articles addressed natural disasters and industrial accidents.

Qin et al. (2020) discussed chemical facilities in Texas following Hurricane Harvey that pummeled coastal Texas in 2017 and how the rain, winds, and resultant flooding impacted chemical facilities. Qin et al. specifically cited a related fire and explosion at the Arkema chemical facility but clarified that it was caused by "flooding and rainfall" with over 40 inches, although there was no mention of CFATS or any LEPCs (pp. 6-7). Jones et al. (2020) also mentioned the same Arkema facility in Texas that ended in explosions resulting solely from significant flooding from a hurricane in 2017 but also did not speak of LEPCs or the CFATS program. Similarly, Jones et al. identified chemical facilities using data from the U.S. EPA's databases to look at how many were in flood zones. There were more articles in this category but none that seemed

to be relative to the CFATS program; however, a general overview helps establish the boundaries of the literature.

An incident referenced in relation to the chemical security topic frequently referred to a fertilizer explosion in West, Texas. The West, Texas fertilizer plant explosion in 2013 killed 15 people, as detailed by Tinney et al. (2016) and Cutchen (2020). This explosion, according to Tinney et al., involved "fertilizer-grade ammonium nitrate (FGAN) – with an explosive energy equivalent to cause the damage of 12.5 tons of TNT" (p. 1,493). Neither the Arkema disaster that resulted from the inundation of floodwaters, or the West Texas fertilizer explosion was caused by terrorists, but both showed the potential devastation possible from such dangerous industrial chemicals, and as such, both serve as frequent references when discussing potential consequences of failure of protecting chemicals. Cutchen (2020) posited that a major outcome of the April 17, 2013, West Fertilizer Company explosion was the Presidential Executive Order issued on August 1, 2013, titled "Improving Chemical Facility Safety and Security (EO 13650)" (p. 1) that federally mandated better collaboration between key federal agencies.

CFATS Collaboration

Some of the points that came out in the literature review were the multiple areas where the CFATS program seemed to overlap into other federal regulatory programs. Per one GAO report (Anderson, 2020), the CFATS program significantly overlaps with the EPA's Risk Management Program and the Coast Guard's Maritime Transportation Security Act. A more recent GAO report (Anderson, 2021, p. 63) described additional overlaps with the CFATS program with the Transportation Security Agency's "rail

security requirements," the ATF's "explosive materials program," the DOT's "hazardous waste program," the EPA's "Resource Conservation and Recovery Act (RCRA) program, the EPA's "hazardous waste program," and also the EPA's "Water Infrastructure Act program."

Why is it important to collaborate? Melnikova (2016) stated, "factors that reduce the duration of human life" include stresses from "external factors that are provoked by the external environment" (pp. 64-65). In the author's context, this referred to safety concerns, but it is not a far stretch to see how security factors such as the threat of terrorist using a company's chemicals for harm or how major flooding, for example, might result in safety system failures releasing chemicals into the environment resulting in numerous public health hazards. Given such possibilities, it would seem apparent that the CFATS program would benefit from greater synergies between the key missions of worker safety, environmental protection, and security of the site and its people.

Is it possible to collaborate, given the size and complexity of the federal government? A government report (GAO, 2018) shed some light on this question, demonstrating the complexity of chemical security and how complex its components contributed to the overall mission but from totally different programs and agencies. Per the report, the DHS had a variety of chemical security-related roles, including "managing domestic chemical incidents; developing and implementing chemical detection technology; providing chemical preparedness guidance and support to state, local, territorial, and tribal partners, and regulating and supporting the security of facilities that use or store certain chemicals" (p. 2). The report went on to list components within DHS

with key roles related to a potential “terrorist chemical attack” including “the Countering Weapons of Mass Destruction (CWMD) Office, the National Protection and Programs Directorate (NPPD), the Science and Technology Directorate (S&T), the Federal Emergency Management Agency (FEMA), U.S. Customs and Border Protection (CBP), the Transportation Security Administration (TSA), and the U.S. Coast Guard” (p. 2). Immediate questions that might come up are who owns what and who is in charge of any specific chemical security threat or issue in a local community? Collaboration amongst all these components within DHS requires a great deal of effort, but there are also many agencies outside of DHS that also require coordinative efforts, per the report, that are based on mission and regulatory commonalities specific to the heavily regulated chemical industry.

External to DHS itself, there are seemingly countless other authorities and agencies that operate in the regulated chemical industry and impact chemical security regulations that should prompt collaboration. Likely the most notable collaboration effort in this context was a federal workgroup established by the Office of Executive Order 13650 (Cutchen, 2020; The White House, 2013) and formalized a working group to improve chemical facility security collaboration by DHS, EPA, and the Secretary of Labor. The Executive Order ("Improving Chemical Facility Safety and Security," 2013) was mentioned in multiple articles, including some as its primary topic (Chilworth Technology, 2014; Kaelin, 2014; "OSHA Leading EPA, Homeland Security on New Chemical Safety Reform Initiative," 2014; "Report Summarizes Progress on Chemical Facility Safety," 2014). One such article (Ramsdell, 2016) mentioned the U.S.

Environmental Protection Agency (EPA) due to a recent regulatory update to its Toxic Substances Control Act that, according to the article, had expanded its oversight onto a "host of chemicals." While the coordination of federal regulators arriving at the same facility for issues related to the same chemical under different regulations (e.g., safety, security, and safety regulations), there are also other areas of the CFATS program that require additional and less traditional collaboration.

In addition to the many regulations and authorities over the physical chemicals, the manufacturers of those chemicals, and shippers of the chemicals, the CFATS program also has regulatory roles in cybersecurity to protect the chemicals. An article that discussed critical infrastructure and domestic terrorism (O'Connell, 2020) brought in the topics of cybersecurity vulnerabilities, citing numerous recent attacks. Lozowski (2014) brought in mention of the "Cybersecurity Framework," created by the National Institute of Standards and Technology (NIST) Framework, established by a Presidential executive order. Cosman (2014) discussed the many security challenges associated with industrial control systems that present unique challenges and how many chemical companies use the NIST Framework to keep hackers out.

Other threats requiring programmatic flexibility include what one author (O'Connell, 2020) referred to as "emerging threats" (p. 5). These new threats, according to O'Connell, included how to deal with drones and "unmanned aircraft systems UAS)" that could "drop explosives and hazardous substances, …be equipped with weapons, conduct unauthorized surveillance, aid hackers in overcoming physical barriers, and act as kamikaze agents for nefarious actors" (p. 5). Looking at that statement just from a

collaboration perspective brings in a need to coordinate with other agencies (e.g., Federal Aviation Administration among others) and UAS groups to partake in discussions on how best to deconflict from UAS threats to chemical facilities while allowing safe areas for recreational and commercial UAS users to operate safely.

Lozowski (2014, p. 5) stated that global interest in "chemical process industries (CPI)" security within the United States was increasing based on the domestic methodology of integrating safety and security together and also the establishment of partnerships to develop policies and best practices from groups consisting of both public and private sector memberships. A common theme among the articles was the need for collaboration among diverse public and private entities, while other articles focused more specifically on change itself to the CFATS regulations.

Changes to the CFATS Policy

The CFATS program is certainly not new to the reauthorization or extension process, but it arguably needs something it hasn't found as of yet to make it permanent or to obtain a long-term reauthorization. The program was implemented in 2007 as an interim rule meaning its future was never certain, according to Sadiq and McCreight (2013). The law was written in Congress to be that way in what Allmond (2012) referred to as the "non-permanence of CFATS" that was created with a "sunset provision" to expire after only three years. Per Allmond (2012), the program continued to be reauthorized in yearly increments up until 2013, with what Lozowski (2014) referred to as an "annual process that the program has undergone for the past seven years since its inception" (p. 5). In 2014 it was fortunate to receive a four-year authorization with the

passage of the "Protecting and Securing Chemical Facilities from Terrorist Attacks Act of 2014, according to the agency's website (CISA, 2020). The program then received a 15-month extension in 2019 (States News Service, 2019), up to its most recent reauthorization in July 2020 that pushed it out to July 27, 2023, according to the (States News Service, 2020). The preference for long-term reauthorization was emphasized in congressional testimony, according to States News Service (2020), by national-level industry groups including the National Association of Chemical Distributors, the Columbus Chemical Industries, Inc, and the American Chemistry Council. The Fertilizer Institute, during the same testimony, supported "a multiyear reauthorization" (p. 9). (U.S. Senate 115th Congress: Committee on Homeland Security and Governmental Affairs, 2018). Another group recommended a much shorter reauthorization at only 18-months (2016). The "American Chemistry Council" (PR Newswire, 2019) supported the CFATS program and promoted a 15-month extension with suggested enhancements to better leverage "industry programs" and "ensuring employee screening focuses on high-risk facilities and protects personal data" (p. 5).

Regulation Changes

There were a number of options provided from various perspectives on how to change the CFATS regulations. One author (Gottron, 2020) broke it down to three simple options that including mandating DHS include "inherently safer technologies" to reduce the overall exposure of their vulnerabilities, formalizing "DHS's current practice of disseminating lessons learned," or the least restrictive option of just allowing the DHS to modify the program on its own (p. 2). Shea (2010, p. 14) noted "some advocacy groups

have called for the inclusion of currently exempt facilities, such as water and wastewater treatment facilities" and suggested modifications to the existing exemptions for MTSA and to the "facilities regulated by the Nuclear Regulatory Commission to clarify the scope of the exemption." Some argued that adding in sewage and wastewater treatment facilities might overwhelm the CFATS program stating the "CFATS was already facility many challenges" (Sadiq, 2013, p. 171). Another perspective (Gottron, 2020) stated the reason for "public water systems and wastewater treatment works" was because these services were critical to public need and shouldn't be subjected to a potential shutdown for security shortfalls by DHS as the consequences of not providing "public sanitation, potable water, and fire protection" would be too severe.

Transparency

The topic of transparency has been applied to the CFATS program in a number of ways over the years, referring to very different issues of concern. A GAO report (DHS efforts to assess chemical security risk and gather feedback on facility outreach can be strengthened, 2013) recommended that the CFATS program "conduct an independent peer review…that fully validates and verifies ISCD's risk assessment approach consistent with the recommendations of the National Research Council of the National Academies (p. 36). The American Coatings Association (ACA) also spoke about the need for better transparency in the CFATS program, but their focus was allowing the chemical facility to have a clearer vision of just how the risk at their facility was determined under the CFATS program (States News Service, 2019). Sadiq and McCreight (2013) argued the need for better transparency for CFATS tiering determinations and security plan review

that was also echoed by the Fertilizer Institute during congressional testimony (U.S. Senate 115th Congress: Committee on Homeland Security and Governmental Affairs, 2018). Shea (2010) spoke about the need for transparency, but in this context, it was more about sharing information with local communities for emergency planning. The Society of Chemical Manufacturers and Affiliates (SOCMA) supported stronger engagement by DHS, stating, "DHS should rely on its private sector partners to share expertise and best practices as it improves its CFATS tools" (Allmond, 2012). These suggestions seemed to align with a previous government report (GAO, 2018) that DHS should verify data provided by facilities is accurate, improve its risk assessment approach, incorporate a peer review of its "risk assessment approach" program, and to better "document processes and procedures for managing compliance with security plans" (p. 29). Per the same GAO report, these recommendations have already been implemented or are in the process of being addressed.

Overall, there were nearly a dozen recommended changes that would potentially benefit the CFATS program, as indicated below by numerous authors:

1. Long-term Reauthorization: The preference for long-term reauthorization was emphasized in congressional testimony by the National Association of Chemical Distributors, the Columbus Chemical Industries, Inc, and the American Chemistry Council (U.S. Senate 115th Congress: Committee on Homeland Security and Governmental Affairs, 2018).
2. Inspector training: Sadiq and McCreight (2013) posited that lack of training among inspectors contributed to "reduced productivity, low employee morale,

and high turnover" (pp. 399-400). A union leader and chemical security inspector provided testimony and stated that inspectors needed "formal and specialized training on physical security" and on cybersecurity to understand, "analysis, understanding, or protecting cyber systems" and not just how to fill out reports, as stated in the testimony of Jesse LeGros Jr. (U.S. Senate 115th Congress: Committee on Homeland Security and Governmental Affairs, 2018, pp. 57-58). These comments were later echoed in a GAO report that while the CFATS program had made efforts to improve cybersecurity training for inspectors, it has yet to create "measures to assess how training will contribute to program results" (GAO, 2020, p. 25).

3. Inherently Safer Technologies: "Inherently safer technologies," per Shea (2010, p. 10), referred to the "mandate or adoption or consideration of changes in chemical process to reduce the potential consequences following a successful attack on a chemical facility." Not all supported IST, as noted by Sadiq (2013) but Shea (2010) went further to add that any IST measures be added to the CFATS regulated facility's site security plan and other agencies, i.e., "the appropriate regulatory entity" able to assess and review the IST recommendation (e.g., EPA or OSHA) (p. 16).
4. Appendix A (list of CFATS regulated chemicals):
    - The International Liquid Terminals Association (ILTA) ("ILTA voices concerns with CFATS," 2020) recommended that "gasoline, diesel, and

other Class 1, 2, and 3 flammable mixtures are categorized appropriately and not treated as 'Chemicals of Interest'".

- Frequent review of Appendix A chemicals: A senior official with Dow Chemical recommended a regular review of the "chemicals of interest list" (U.S. Senate 115th Congress: Committee on Homeland Security and Governmental Affairs, 2018).

5. Land use planning (LUP): According to Khakzad and Reniers (2015), LUP uses zoning areas so that high-risk types of activities (e.g., chemical facility) would not be in the same areas as homes, hospitals, and schools.
6. Tiering process transparency: Sadiq and McCreight (2013) argued the need for better transparency for CFATS tiering determinations and security plan review that was also echoed by the Fertilizer Institute during congressional testimony (U.S. Senate 115th Congress: Committee on Homeland Security and Governmental Affairs, 2018).
7. Regulatory compliance: A report (GAO, 2018) stated the agency needs to better "document processes and procedures for managing compliance with security plans" (p. 29).
8. Information sharing with LEPCs and 1st Responders: Shea (2010) spoke about the need for transparency with local communities for emergency planning, but the extent of this was mostly related to preemption concerns so that local and state laws didn't conflict with the federal CFATS program.

- Partnering with industry: The Society of Chemical Manufacturers and Affiliates (SOCMA) stated, “DHS should rely on its private sector partners to share expertise and best practices as it improves its CFATS tools” (Allmond, 2012).
- Regulatory collaboration: A senior official with Dow Chemical recommended improved coordination for CFATS with other federal chemical security and safety regulatory programs” (U.S. Senate 115th Congress: Committee on Homeland Security and Governmental Affairs, 2018).

9. Emerging threats (e.g., drones): These new threats, according to (O’Connell, 2020) included drones and “unmanned aircraft systems UAS)” that could “drop explosives and hazardous substances, …be equipped with weapons, conduct unauthorized surveillance, aid hackers in overcoming physical barriers, and act as kamikaze agents for nefarious actors” (p. 5).
10. Synergy amongst regulatory agencies: Melnikova (2016) stated that any changes to the CFATS reauthorization should continue to evaluate synergies between these key roles of worker safety, environmental protection, and security of the site and its people.

Summary and Conclusions

Literature, testimony, reports, and related materials collected for this review provided an extensive overview of the CFATS regulatory program, its struggles that it has overcome or continues to make improvements on and pointed towards improvements

that would make it better if reauthorized in 2023 or made permanent. From the review, recommendations for improvements were discovered, and some of the program's past struggles and challenges were presented. After conducting this thorough review, it was clear there was a gap in that next level of depth to discuss the CFATS program, possibly with additional roles in preparedness, mitigation, and possibly even response. This area of study has not been adequately debated, and neither has the role of the LEPC on this topic to get their perspective and input on how the CFATS program could more effectively support their needs. It is theorized that such a study will strongly benefit research on this topic by contributing to the existing body of knowledge. The methodology for how this research was conducted is discussed in detail in Chapter 3.

Chapter 3: Research Method

The purpose of this research was to explore the relationship between the DHS CFATS program and the LEPCs across the State of Washington to fill in the gap in literature reflecting the interaction and potential contributions that might further the body of knowledge on the efficacy of the CFATS program from the view of the LEPCs. This research is intended to contribute to a body of knowledge that could potentially lead to an increase in community preparedness related to a chemical attack in the State of Washington by more effectively understanding the LEPC-CFATS relationship and that could additionally contribute to policy improvements during its next potential reauthorization in 2023.

The gap on this topic became apparent after extensive research into existing literature that showed previous analyses (Anderson, 2021; Caldwell, 2014; GAO, 2016, 2018) evaluating the CFATS program at the federal level regarding challenges with its implementation, how it performed, and how it overlapped into other preexisting federal programs. What previous analyses did not do was to ask LEPCs for their perspective on how the program was working, how it supported their efforts at the local community level, how it possibly made their jobs more complex, or how it could be modified to make their jobs easier. I looked at the CFATS program from the perspective of the LEPCs because these groups deal with many of the other chemical regulatory agencies and have the potential to contribute significantly to the understanding of the program. To fill the gap or contribute to its understanding, I used the research employed Bamberger and Mabry's (2020) evaluative approach for methodology using the contingency theory

of organization (Donaldson, 2001) and the theory of organizational culture (Shafritz et al., 2005) to frame the discussion. I used these data to fill the gap in literature specifically for LEPCs in the State of Washington regarding their engagement and experience with the CFATS program in the context of how it contributes to increased preparedness at the community level.

In the following sections, I describe the methodology that was used in this research and how the data were obtained. In the first section, I explain why the specific methodology was chosen, and then I explain the role of the researcher as it pertains to this research. The methodology is discussed for the study, and this includes the sampling strategy, recruitment of participants, sample size goals based on similar research, and the instrumentation; the section closes with a conclusion that summarizes the chapter.

Research Design and Rationale

The following questions were developed to conduct and guide this research into the efficacy of the CFATS program specifically within the State of Washington:

RQ1-Qualitative: What changes to the CFATS program should be made to promote greater mission effectiveness to protect regulated chemicals in the state of Washington?

RQ2-Qualitative: How could organizational changes improve how the CFATS program protects high-risk chemical facilities in the state of Washington?

To answer the questions regarding the efficacy of an existing federal policy that is specific to Washington, I chose the theoretical frameworks of Donaldson's (2001) contingency theory of organization and the theory of organizational culture (Shafritz et

al., 2005). This contingency theory was chosen to evaluate the program from a perspective of something external having a direct impact on it, such as a successful terrorist attack or use of industrial chemicals regulated by the program to look introspectively at the regulation to see how it might be changed in that context to better support such an event as opposed to looking at the program in a static state where it is operating under the best of conditions. The secondary theory was used to take a look at the static program to assess factors that might be positively or negatively contributing to its functionality.

The organizational culture (Shafritz et al., 2005) of a program is important to look at as it is likely to impact morale, training, competency, and other factors. For example, if the organization is law enforcement focused and it spent a lot of its energy on that particular identity, it might miss opportunities to align with other organizations that identify more on the safety or protection of the environmental aspects. This was important to evaluate as a potential contributing factor that might limit or strengthen certain types of interagency and public-private collaboration that could help the program be more effective in its implementation. As such, it was important to frame this study using this theory as it fills an existing gap in literature and study on this topic.

Selection of Qualitative Method

To obtain the appropriate and most relevant research methodology, I referred to Walden University's research center to review, compare, and analyze the most relevant design and methodology resources and relied heavily on guidance in key reference books such as *Research methods in public administration and nonprofit management* (McNabb,

2008), *Qualitative inquiry and research design: choosing among the five approaches* (Creswell, 2007), and *The SAGE encyclopedia of qualitative research methods* (Given, 2008a), emphasizing the chapter on evaluation research. From this guidance and established methods, the evaluative approach was chosen, as described by Bamberger and Mabry (2020) in their book titled *Real world evaluation: Working under budget, time, data, and political constraints*. This approach provided great depth and breadth on the research design, allowing for flexibility to align with the research questions, purpose, and gaps identified in the literature.

While the evaluative research design option was chosen as the most appropriate research design, other options were considered but eliminated due to limitations or strengths in other areas that this intended research would not support. Other approaches considered included the five approaches identified by Creswell (2007) of narrative research, phenomenology, grounded theory, ethnography, and case study. From that list, the approaches of phenomenology, grounded theory, and case study were first reviewed as potential frameworks while deciding what aspects of the policy would be researched and what best aligned with the purpose, the research questions, and the existing gap in the literature.

Role of the Researcher

The qualitative method for this research employed an evaluative approach, as detailed extensively by Bamberger and Mabry (2020), and the role of the researcher included both tacit and interactionist roles, as described by Given (2008b). The tacit roles, according to Given, refer to the expertise and knowledge the researcher brings to

the research that would make the researcher the "recognized expert" who would make sure the study continues forward following established policies, standards, and procedures. These roles, in this context, include possessing expertise in the federal regulatory professional field dealing with chemicals, a current understanding of the existing literature on domestic chemical security antiterrorism issues, understanding the roles that are key to begin this evaluative approach, such as understanding the key organizations at the federal, state, tribal, local, and private sectors, and how to engage these entities involved in the sampling successfully.

In the second role of the interactionist, as defined by Given (2008b), the researcher could potentially fulfill the roles of "complete member" and the "participant as observer" if an LEPC asked for more personal interaction to explain the CFATS program in greater depth and to answer questions about specific components of the policy or program (pp. 4-8). My data source came from the 43 LEPC contacts across the State of Washington. In that context, I acted as a participant and observer only to engage virtually with a potential participant if a particular person had questions or wanted more context prior to consenting to participate in the anonymous online survey. This only happened twice when two contacts asked a clarifying question or responded to ask a related question that was outside the bounds of this study. Such an interaction was likely due to comfort levels, such as wanting to better understand the CFATS program in Washington or to establish a certain level of trust with me prior to consenting or recommending others participate in the anonymous online survey.

I am a federal employee within the agency that implements the CFATS program in the Pacific Northwest, including the State of Washington. However, I did not have an authority role or position of authority over any of the candidates sampled but rather served as an expert in the CFATS program who could help explain the current iteration of the policy and answer questions that respondents had to better understand the limitations and breadth of the policy. With this position, I did have several invited participants engage with minimal questions or statements that included updates on staff changes, an invite for me to chair a specific LEPC, and one member who requested the e-mail invitation be resent because of significant computer issues they had that prevented them from initially participating. I did not receive any questions back asking for clarification on the policy or any subsequent engagement.

To minimize bias, sampling was set up to be obtained online only and anonymously from each of the respondents with their own written responses to minimize any introduced interpretation by myself, as discussed by Katzer et al. (1998). I chose to focus on data collection from each of the 43 listed LEPCs contacts across the state of Washington via their single representative published in public records to distance myself from any perception of coercion or influence and to afford a high level of geographic diversity in the participation. This selected population allowed for the broadest voluntary participation in the research, and the research was presented as completely voluntary and solely for the purposes of commenting on the existing regulation to identify data related to its efficacy from the LEPC perspective. I made extra efforts to separate this research from having any formal or implied connections to anything from the U.S. DHS by stating

so in the consent form and only engaging the potential sample pool using the Walden e-mail. No incentives were given for this research related to any data collection.

Methodology

Participant Selection Logic

I chose to focus on members of the LEPCs in Washington because they potentially provide access to a very diverse cadre of experts who are over 18 years of age and who deal with numerous aspects of chemical hazards (e.g., first responder, policy, emergency management) in specific communities and represent every corner of the State. According to the State of Washington's Emergency Management Division (2021) website, there are 43 LEPC contacts listed for Washington. These LEPCs represent every part of the state and are comprised of both those in public and private sectors with knowledge about dangerous chemicals in their specific areas; they also include tribal representation and at least one large military base. Every LEPC contact was contacted by e-mail and invited to participate in the study. Each invitation also invited the chairperson of the committee to invite others within their own committee to participate in the anonymous online survey. This was done to allow the chairperson to speak for the group or to allow that person to defer to someone within their own committee who was much more knowledgeable on the topic or just to expand perspective at their prerogative. This was encouraged to help broaden the expertise of the respondents and the specialties they represented to help with diverse views on the program.

The intended sample size was a minimum of 13 respondents from LEPCs within the State of Washington. LEPCs, in general, often contain voluntary memberships that,

according to the bylaws of one large LEPC in Pierce County, Washington, can include "state and local officials, law enforcement agencies, emergency management agencies, firefighting agencies, first aid agencies, local environmental organizations, hospitals, transportation organizations, news media, community groups, owners and operators of [chemical] facilities…and institutions of higher education" (Kilpatrick, 2020, p. 3). This target number was selected after reviewing guidance on sample selection strategies and limitations (see Creswell, 2007; Katzer et al., 1998; McNabb, 2008) and a similar research design (see Moss, 1982), where the researcher divided the participants into three categories of perspectives to allow for a deeper dive into the content offered from the sample population. This study garnered 11 respondents almost equally representing rural and urban LEPCs.

Sampling Strategy

Selection of the LEPCs were chosen as the source of the sampling as these groups deal at the local community level issues related to dangerous industrial chemicals, and the role of the LEPCs was highlighted as significant during the literature review (Shea, 2011; U.S. Senate 115th Congress: Committee on Homeland Security and Governmental Affairs, 2018). LEPCs serve the role of preparing communities to address dangers associated with various chemicals in their community with varying degrees of success, as noted by Whitney and Lindell (2000). Whitney and Lindell noted that LEPCs are mandated by law and are staffed by volunteers from various groups, but they often get very little to no funding to carry out their immense responsibilities. For these very

reasons, the LEPC members in Washington were chosen as the source of the samples due to their passion and vested interest within their own local communities.

Participant Selection Criteria

The LEPC chairman or primary contact listed on the contact LEPC contact sheet (Washington Department of Ecology, 2021) was used for primary contact with each of the 43 listed LEPCs, according to the state (Emergency Management Division, 2021). From that point, the selection of each potential respondent relied on the primary point of contact to respond and participate personally, to refer the request for participation to any of its members, or to not respond. Referrals were limited to members of the individual LEPC or those who had a direct and supporting role, such as any advisors or regulatory personnel specifically identified by an LEPC. There was a duration cutoff for participation (i.e., 2 weeks), but the research included all data submitted that represented LEPCs across Washington.

How Participants Are Known to Meet the Criterion

Participants in the study were adults 18 years old or older who had experience in the chemical industry from industry, regulatory, government, or first responder perspectives. The LEPC resource was selected as the primary population resource as this itself filters out the sample to only those who have an interest or vested interest in chemical safety or security in that specific community. From that population, several questions were used to categorize the participants into subcategories and years of experience to help data coding later by associating types of recommendations or comments to each subcategory (e.g., first responders, emergency managers, or elected

officials, and whether their LEPC is in a rural or urban community). Because there was a gap in the literature on the CFATS program from an LEPC perspective and no previous studies on LEPCs specific to the State of Washington, I accepted all responses and then categorized or coded appropriately such as one who responded they did not belong to a LEPC in Washington as that was originally considered to be a disqualifying response and it could not be known if it that option was selected in error or not. If a respondent annotated or stated they had no experience but still provided a sound recommendation to the future of the CFATS regulation, this was included and categorized accordingly in this study; this referred to their level of expertise on the CFATS program. Because not all LEPCs had CFATS regulated sites in them, this was not a disqualifier as it is understood that just because the LEPC member was thoroughly versed on the CFATS program, they still knew what was needed from such a program to help secure dangerous chemicals in their community and could so share that response to help support this research. Verification of the sources was not done as it was an anonymous online survey, and there was nothing in the data provided that suggested any irregularities that would stand significantly outside the boundaries of what was presented in Chapter 2.

Identification, Contacting, and Recruitment of Participants

The sample population came from the 43 LEPC contacts located in Washington, and contact information was through formal channels published by the State of Washington's Emergency Management Division that provides the public listing of the LEPC and contact information. The researcher contacted all 43 listed LEPC contact e-mails, provided an overview of the research being conducted, an overview of the topic,

and the type of individual sought for inclusion in the study. It was expected that only a portion would respond to the inquiry and participate in the online anonymous questionnaire and approximately 25% did participate.

Relationship Between Saturation and Sample Size

The target sample size desired for this study was 13, and the researcher accepted all respondents that replied within the window provided during the open period described within the survey invitations (e.g., 14 days). The saturation number, if achieved, would be the point that all 43 LEPCs provided a response, or only a fraction of that have responded, but no new information is obtained in any or all of the subcategories demonstrating an effective and representative sample of the intended population. This recruitment method would ensure there is a minimal bias associated with the researcher regarding who gets chosen to participate.

Instrumentation

The researcher used a researcher-produced survey to collect data for this research as the intended primary tool of collection. An e-mail invitation was provided to all 43 LEPC contacts across Washington that included a link to the online survey. The e-mail introduced the issue and had a link to the online consent form for ethical protection concerns that aligned with Walden University's Institution Review Board and requested voluntary participation in the survey to assist in the research. To facilitate data collection and coding, online software called SurveyMonkey was used as a data collection tool, but final data coding was done manually.

Summary

This section explained the methodology used in this qualitative study to contribute to the body of knowledge related to LEPCs in Washington and the CFATS program in their shared mission to prevent terrorists from accessing certain dangerous chemicals to harm Americans. The section described the research design and rationale for choosing this method, explained the role of the researcher, and went over the methodology in detail. The sampling strategy was discussed and why that particular group was chosen, and also how the participants were recruited. Lastly, the instrumentation for the study was discussed, and then the section was summarized. The data collected from these LEPCs in Washington, how it is coded to make it more functional, and other related details will be discussed next in Chapter 4.

Chapter 4: Results

Introduction

The purpose of this qualitative evaluative study was to assess the efficacy and potential areas for change to the CFATS program from the perspective of LEPCs in Washington to fill a gap in literature. The CFATS program has been evaluated by the federal government itself (Anderson, 2020, 2021; GAO, 2020), there are multiple articles on how it implements its program on the chemical industries throughout the nation (CISA, 2020; Houlton, 2014; Khakzad & Reniers, 2015; Lozowski, 2014; "US facilities slow to develop anti-terrorist plans," 2015), and there are some articles about how national security-focused regulations have conflicted with existing environmental protection regulations (Chekouras, 2007; Cutchen, 2020), but a gap existed with the overlap between LEPCs and the CFATS program. To guide the research, there were two research questions that addressed what changes could be made to the CFATS program to make it more effective in Washington, and if there any organizational changes that could contribute to that improvement.

In this section, I present the data obtained from the study. The setting of the research is discussed to explain why the target group was used to obtain the results. The demographics of the study are presented in this section to illustrate the various categories the anonymous respondents self-identified. This section also details the data collected along with the process used. Chapter 4 contains a section of the data analysis to present the qualitative data coding used, provides evidence of trustworthiness, and concludes with a section on the results and a summary.

Setting

The data collection for this research took place in mid to late June of 2021 in Washington, and this specific period presented some challenges, with several competing events that LEPCs were simultaneously facing. First, the entire state was under an excessive heat warning forecast for the upcoming week (The Weather Channel, 2021) with triple digit temperatures on the way, and this likely was a focus for planning with emergency managers, first responders, and chemical industry professionals. The second competing priority that may have detracted from participation in this study was a disruption to the supply of chlorine that threatened drinking water supplies and water treatment facilities in the state (see Thompson, 2021). This chlorine shortage resulted in at least one community in Washington declaring a water shortage emergency (Thompson, 2021). The third potential factor that could have detracted from study participation was that LEPCs were ramping up to summer activities that coincided with the governor's reopening of the state on June 30th after being locked down more than a year due to COVID-19 pandemic restrictions (see Inslee, 2021).

The process for data collection involved reaching out virtually to the LEPC contacts in Washington using publicly available data. These contacts were initially contacted regarding the study and invited to participate in the anonymous online study. Given the competing priorities, a follow up reminder was sent a few days after the initial invitation and a third and final batch of e-mails was sent near the end of the data collection period that garnered an additional four participants. Overall, 11 participants accepted the consent to participate and joined the study, representing an approximate

25% response rate of initial list of invites. The data provided helps fill the void in literature by hearing from a new perspective on the CFATS program from that of the LEPCs.

Demographics

The study consisted of a total of 11 participants, and the demographics obtained included several categories to help broadly categorize the participants while also maintaining their anonymity. I invited LEPC members over the age of 18 by contacting each committee in Washington using contact data provided on a state website and then asking those contacts to share within their own membership. The respondents were then provided with several questions that categorized them such as whether they indeed belonged to a LEPC in Washington, whether they considered it to be in an urban or rural community, and the expertise on the LEPC the participant self-identified (e.g., fire, law enforcement, emergency management, public official). See Table 1 for the demographics.

Table 1

Demographics

Respondent #	Member WA LEPC (Y/N)	Urban(U)/Rural (R)	Expertise (EM, Industry, other)
1	Y	R	EM
2	Y	R	EM
3	Y	U	EM
4	Y	U	EM
5	Y	R	Industry
6	Y	U	EM
7	N	U	Other
8	N	-	-
9	-	-	-
10	Y	U	Other
11	Y	R	EM

Note. EM = Emergency manager; "-" = no response.

While there was a total of 11 respondents that logged into the anonymous survey stemming from the e-mail invitation that was sent to all Washington LEPCs, there were a couple peculiarities worth noting. Two participants stated they were not members of a Washington LEPC but any information they provided was still coded as it was assumed there might have been some confusion with the question. For example, LEPCs can have very formal memberships with elected positions while others might be much less formal. In either case, there are frequently many additional participants who engage with an LEPC and would be considered part of the group for the purpose of this study but it is probable that the respondents were stating they weren't part of the elected LEPC board membership. The other item worth noting was that Respondent #9 did not provide any input to the study other than declaring consent to participate. This could be attributed to someone with computer or network issues or someone who just wanted to see the questions and then chose not to provide additional input. Rather than disqualifying these Respondents from the study, they were left in for full transparency of who participated. For Respondents # 7 and #8 who stated they weren't part of an LEPC, they were included because their input appeared very valid in comparison with the other entries and their responses did not raise any other concerns that might have indicated potential unintended access from someone outside the intended parameters of this study.

Data Collection

The authorization to commence data collection was provided by Walden University's Institutional Review Board (IRB) on June 14, 2021, with the authorization number 06-14-21-0042902. Invites to participate in the study were sent out via e-mail in

batches of three to five using contact information on the State of Washington's website for LEPC contacts (Emergency Management Division, 2021) on June 15, 2021. The invitations were sent to all 43 listed LEPC contacts plus the LEPC program coordinator who was also listed in this location, for a total of 44 invitations. The contact names came from a downloaded version of the list of contacts that was saved in May, and after comparison with the website version that was more recently updated, it was determined that two of the contacts had changed in the span of about a month. As a result, two additional invitations were sent to the newly updated contacts identified during the quality assurance check. The invitations encouraged the LEPC contacts to participate but also to share within their committees at their discretion. If this sharing happened consistently across all the groups and if a conservative estimate of 15 members per LEPC was used, then 43 committees multiplied by 15 members could have exposed the survey to well over 600 people. With the relatively small response rate and almost equal representation from both rural and urban LEPCs, I posited that the invitations were not further distributed or were distributed on an extremely limited basis. Regarding validation of these invitations being sent and received, only one was returned as not available with an out of office that stated the contact would not be available until October or for 4 additional months. Another one was returned due to a typo in the e-mail address, and this was verified, updated, and resent within hours of the original invitation. The final participant submitted data to the survey on July 1, 2021, that closed out the 2-week data collection period.

The duration for data collection in Chapter 3 used an example of 2 weeks, and during the oral defense, the proposed method was to open it up for a week and then consider if an additional week would benefit the study and do this based on the level of feedback as it was possible that a high number of respondents could have participated. Given potential competing factors, possibly lack of interest, or other unknown factors, the survey slowly collected participants directly linked to the initial invite, the follow up, and then the final reminder, and after 11-days, the online survey was closed due to inactivity. After receiving feedback from one respondent regarding the survey, it was opened up to allow additional responses, but after only one additional response, the survey was closed and taken offline on July 1st with its 11th participant. At this point, the participation numbers had reached its maximum and further reminder or requests would not have drawn additional participation and might be perceived negatively for repeated follow ups. Due to competing factors previously discussed that may have competed for attention with the LEPCs, the LEPCs had been adequately queried and given ample time to respond or indicate if they needed special provisions.

As noted in Chapter 3, the data were collected using a commercial survey tool called SurveyMonkey, allowing participants to retain anonymity. This database is well known and was likely familiar to many in the target audience; this was used intentionally to allay any cybersecurity concerns anyone might have had with the e-mail invite, with a hyperlink embedded to encourage potential respondents' participation. To allow for modification of the survey and appropriate level of use for this study, I upgraded to a paid plan called the advantage plan that allowed for more tools to design the survey and make

it as easy and simple to use as possible for the participants. This purchased plan allowed for data collection and exporting to documents to various formats that could be saved and stored securely, as required by the IRB for archive requirements of academic research.

Data Analysis

Data analysis was done manually using a simple qualitative data worksheet as the most effective tool to link the data to the research questions. The data submitted to the online database for this study was from 11 respondents, and the responses were mostly short, direct statements that sometimes left me to interpret the meaning or implications. Given the type of data provided and the relatively small number of respondents, I chose to use a modified version of the qualitative data analysis worksheet provided by Walden University. A separate worksheet was used for each relative question where the 11 respondents were listed in the column to the left for a particular question by participant number only and then a bullet(s) was added for their response to that question in the next column labeled data. Once that was entered for all appropriate respondents, the bulleted items were then grouped into coded categories in the next column in groups, such as training, planning support, and security assessments. The final column was used to identify the theme of what the coded categories was presenting. This process was iterative and edited numerous times to make sure themes were not lost, over emphasized, and appropriately reported based upon the data provided.

Actual coding methodologies used in this study included first cycle structural coding followed by second cycle pattern coding (Saldaña, 2013). The first round or cycle was to pull out the major bullets, comments, or words related to the question asked while

the pattern coding after that was used to categorize and group the responses. As part of the first cycle coding, any words, or references to a specific county or LEPC were removed to maintain the anonymity of the survey. Second cycle coding helped identify themes and patterns that emerged as a result that were previously not as apparent or seemingly present. Other coding methodologies were considered (e.g., attribute, descriptive, in vivo, eclectic), but the structural and pattern coding worked most effectively given the data type and content. The process was repeated multiple times to look for theme and pattern changes, and then the original data were reviewed to make sure there was a clear and repeatable flow from raw data through the coding process to obtain the same or similar themes reported in this research and that no discrepant responses were excluded or inappropriately marginalized.

Evidence of Trustworthiness

The data collection method used in this study was chosen to increase trustworthiness and validity of the data. The invitations to participate were sent out to LEPC contacts publicly available on the State of Washington's website for LEPC data, sharing of the invite to LEPC members was solely at the discretion of the single contact listed for each group, and participation was completely anonymous using an online survey. Additionally, to record the data, a commercially available professional survey tool was used to compile the responses, store the data initially, and export the data in various formats to help with analysis and archive requirements. After the initial invitations were sent out, the contact names and email addresses used for the invite were

compared with the state website, and I discovered two contacts had recently changed. Invites to the two new contacts were sent out the same day as the other members.

The entire methodology aligned with what I previously described in Chapter 3 with only the slightest of modification. The survey was initially opened for 11-days instead of the full 2-weeks, and this was largely due to the low response involvement that I did not feel additional time would garner additional participation. Shortly after closing the database, an additional LEPC chair reached out and asked to participate stating that they had received the invite, wanted to participate, but that their computer server room was flooded so the online survey was opened back up for the full 2-weeks but only garnered the one additional participant. The other minor adjustment was the additional reminder solicitations that were sent out to promote greater participation. The first reminder was sent out 2-days after the initial invitation and the second follow up was sent the following week. No other methodology changes were noted regarding variations to what was previously articulated in Chapter 3.

Results

In this section, the results are presented in four broad categories that represent the aggregated and coded data. The data could fit under either research question of what could improve the CFATS efficacy as a program but also what organizational changes might contribute to its effectiveness. The discussion on how the data contribute to each research question will be discussed in detail within Chapter 5. This section will provide the data along with any context or expansion on the topic that might further its contribution or understanding.

The below section provides data provided categorized by the question asked in the survey.

1. Level of familiarity and understanding of the CFATS program, as defined by Title 6 Code of Federal Regulations, Part 27:
2. Do you believe your LEPC is the appropriate organizational level to work with the CFATS program? The LEPC is the appropriate forum for the CFATS program to engage as it collects chemical data from communities already, is an established public-private sector group for threat-info sharing, provides a networking forum for people in these professions, and allows for adaptability amongst those relationships to fill gaps such as how one county noted that they do not have local fire response for dangerous chemical responses but rather rely of federal support from the military.
3. What is the most important contribution the CFATS program could provide your LEPC? Direct assistance, writing security plans, helping with industry outreach and engagement, providing security recommendations, and training for the LEPC membership about the CFATS program.
4. If you could change one thing about the CFATS program, what would it be? The most predominant change recommendation was for much greater LEPC engagement, more routine sharing of threat information, make security recommendations, and provide security related training for all chemical facilities, not just CFATS regulated sites. In this same context, there was also a clear recommendation to have more CFATS inspectors.

5. From a whole of government approach, what could the CFATS program do better to make the chemicals more security in your community? While one respondent recommended the CFATS program be defunded since they thought it added nothing additional to what they already received from EPA's Risk Management Plan program, the majority noted needs such as providing security assessments, grants for equipment, security training, and support writing their security plans.
6. Have you worked with anyone from the CFATS program previously and was that a positive experience? Most (6) had met someone from the CFATS program and had a presentation and other support with a positive experience. One possibly met TSA Rail Inspectors more than 7 years ago, two had never met anyone from the CFATS program and two did not respond.
7. If your community was attacked by terrorists resulting in a chemical release, what enhanced support could the CFATS program provide? The respondents wanted CFATS support primarily in preparedness planning for such an attack but also a couple incident management support roles emerged. The support roles identified a need for an inspector assigned to the impacted LEPC to help liaise and communicate with the chemical industry (e.g., impacted facilities and others in range), help integrating into a federal response such as knowing what assets and resources might be available, and also support in such a case with public messaging to use their expertise in homeland security, chemical

security, and federal operations to help the LEPC get the right message out to their communities.

8. What phase of emergency management do you feel the CFATS program contributes most to and should that be changed? Of the options of prevention, protection, mitigation, preparedness, response, and recovery, the respondents chose prevention, protection, and mitigation. The prevention role was emphasized as a positive contrasting it against other regulatory programs seemingly more focused on issuing fines and stopping work whereas CFATS reportedly focused more on increasing security and supporting industry.
9. Any additional concerns about the CFATS program or potential improvements? What came out of this question for actionable items was to work through the SERCs, be more visible in everyday actions, more effectively communicate the key differences between CFATS and other programs with potentially overlapping roles (e.g., OSHA, EPA), and consolidation of those regulatory / security roles where and if applicable.

Deletion of *CFATS*

For fairness of reporting, there was one participant in the study who did not think the CFATS program added value in addition to what the EPA and OSHA already provided. Some of this person's responses did not show up or stand out in the overall data themes, for the most part, because in many cases they did not provide recommendations beyond stating the program should be deleted. While it is always good to have dissenting opinions to broaden the discussion, it is also good to have additional characterization to

help potentially explain the perspective on the person's contributions to further the understanding of their input. As such, this section specifically calls out that single respondents input to make sure it is given adequate attention since it might seem that it did not show up adequately in the previous themes representing the key questions in the survey.

There was a single respondent who recommended complete sunset of the CFATS program but diving deeper into this person's demographics and other response contribute to a better understanding of the single perspective. This response was only seen from a single respondent, Respondent #5, who self-identified as a member of industry from a rural LEPC but with expertise level knowledge of the CFATS program. From this respondent, their view was that the CFATS program was redundant, from an LEPC perspective, as the LEPC already receives its chemical data from the EPA requirements. According to Respondent #5, the list of chemicals in a community "mimics the public list of facilities and chemicals" and the CFATS program with its "ridiculous confidentiality requirement…completely contradicts the purpose of the LEPC." When responding to the question about what stage of emergency management did the CFATS program contribute to, the respondent stated that they, "have not witnessed any evidence of CFATS" and that they were, "not aware of CFATS ever preventing a terrorist event" and finally, that the OSHA and EPA regulations on chemical facilities addressed all site security issues. Some of these comments might result from the actual or perceived redundancy with other regulatory programs.

Removal of Any Redundancies with EPA and OSHA

Respondent #5 brought up a key issue that no other respondent mentioned, and that was the issue of purported redundancy and overlap with other federal regulatory programs. In this specific instance, the respondent only noted programs under EPA and OSHA stating the CFATS programs were duplicative and therefore should be deleted as they provided no additional value to the LEPC. The respondent stated that OSHA's Process Safety Management protocols and EPA's Risk Management Program provided all the security tools that were needed as part of OSHA's Process Hazard Analysis. Along the same theme, Respondent #11 mentioned a need for a federal framework for all agencies with chemical security roles to clarify roles and responsibilities as well as requirements to help LEPCs better understand who has what role. The potential overlap with other agencies is important to understand at the LEPC level to know how to get resources, grants, and support and this point was made clear in the data obtained in this study.

Greater LEPC Involvement

By far, the most common response for what changes the LEPCs wanted from the CFATS program was for greater participation with the LEPCs. Data supported this participation because it was the most appropriate group dealing with chemicals in a public-private partnership for interfacing, the LEPCs were considered the original node for chemical reporting under various agencies, it allows for partnership building and modifications based on need, and it is great for networking. What the respondents wanted to see out of the CFATS engagement with LEPCs was broken down into four

subcategories discussed below. These categories included more coordination with the state coordinator for the LEPCs, more security related training, support during a crisis to communicate with the chemical industry, identify response resources available, support recovery from the incident, and assist in public messaging during an incident.

Working Through the State Coordinator

The LEPC program has a coordinator or coordinating office at the state level called the State Emergency Response Commission (SERC) that provides oversight, funding, and coordination to the LEPCs within that particular state (Washington State, 2017). Respondent #1 from a rural LEPC in Washington, with a general understanding of the CFATS program, and an emergency management background suggested that their one change to the program would be greater LEPC and SERC level participation. While others also noted greater LEPC participation from the CFATS program, this was the only respondent to note the important of engagement with the SERC office as well. For the open-ended question on any additional suggestions for CFATS program improvement, the Respondent suggested having "CFATS work in concert with SERCs…[for] access to LEPCs".

Security Training and Grant Funding

When asked what the greatest contribution the CFATS program could provide their LEPC, a common theme that broke out was training and grants to support equipment for that training. Respondent #2 specifically noted a desire for "mandatory training and funding to support the training" while Respondent #3 noted "training and less secret squirrel mentality", stating that the CFATS program should not only teach the

facilities it regulates but also the LEPCs. The same respondent when asked what the one thing was from a whole of government perspective that could help make chemicals safer in their community with examples like grants, security assessments, and equipment, and the Respondent #3 stated only one item, and that was for more training. What topics the LEPCs wanted in this training included topics such as security assessments, according to Respondent #6, site security training, per Respondent #10, and consolidated state and federal requirements for security and response to hazardous chemical incidents, per Respondent #11.

Liaison Role

The liaison role from the CFATS program was a clear theme that emerged from the question of what contribution could the CFATS program provide your LEPC. From that question, the data showed a desire for CFATS support in developing security plans within the LEPC, sharing of threat information, access to after action reports, help with preparedness planning, CFATS support with outreach to local industry, CFATS support in providing security recommendations to more effectively protect chemicals in the community and not just those that are CFATS regulated, and for the program to provide a better understanding of what it is and what it can offer.

Public Information Role

Dovetailing off the liaison role, the public information role came out as a theme in response to the question asking what post incident support would the LEPCs like to see from the CFATS program. Some of the points made on this response theme included the need-to-know what facilities in that LEPC jurisdiction were CFATS regulated, per

Respondent #3, a desire for assistance the chemical facilities and public information dissemination, per Respondent #4, and help understanding how a federal response would integrate into what the LEPC was doing, per Respondent #1.

More Inspectors

The last major theme that came from the data was a recommendation for more inspectors from the CFATS program, noted by both Respondents #2 and #10, although Respondent #5 did recommend eliminating the program altogether. Other respondents commented with questions as to what additional help they could get from the CFATS program. Respondent #7 commented about specific security training for both regulated and non-CFATS regulated chemical facilities while Respondent #4 wanted more security assessments, and Respondent #6 noted help with drafting plans.

Summary

The research questions that guided this research asked what changes could improve the CFATS program in the State of Washington and then also what organizational changes would also improve the program. While a single respondent from the chemical industry recommended ending the CFATS program as a redundant program to what the EPA and OSHA already provided, the remainder of the respondents supported enhancements and even expanded roles that might require expanded authority. The enhancements included clarification of where the CFATS program functioned that was different from the EPA and OSHA to more participation in the LEPCs themselves. This LEPC expanded role includes coordination through the SERC, providing various types of security training that apply to CFATS regulated and non-regulated sites,

supporting or assisting with engagement with industry, and public information assistance to not only help with communicating with industry but with public messaging during a chemical incident. A theme that emerged in this context was more support during a chemical incident to help the LEPC understand its integration into the federal response system, help identify available federal resources, and even support recovery. Lastly, all this additional support did also recognize a need for more CFATS inspectors to work more proactively with all LEPCs regardless of whether they had CFATS regulated sites in their jurisdictions or not. My research revealed that most LEPCs wanted more inspector involvement to help with preparedness planning, industry engagement, and security related training for the LEPCs themselves.

These findings are further discussed in Chapter 5 and compared against what the literature review discovered in Chapter 2. Chapter 5 discusses the findings, interprets the themes, and discusses the findings from the theoretical framework of contingency theory and organizational theory. The following section provides the implications for this study in the context of positive social change and provides recommendations based on the findings.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of conducting this research was to evaluate the efficacy of the CFATS program in Washington from the perspective of the LEPCs in Washington. This was done because of the importance of protecting communities from a chemical terror attack and to fill an existing gap in literature on this topic that had not previously looked at the efficacy of the CFATS program at the state level and from the LEPC perspective to ask what worked, what did not work, what could change, and how the program could be made better. The study contributes to the body of knowledge by using a qualitative approach using Bamberger and Mabry's (2020) evaluative approach for methodology. To frame the study in theoretical concepts, I used the contingency theory of organization (Donaldson, 2001) and the theory of organizational culture (Shafritz et al., 2005). This increased understanding helped fill the gap in the literature.

Several change recommendations that came out of this study added to the existing literature in that Washington LEPCs wanted more inspectors, more participation, grant funding for equipment and training, more support in their planning efforts, more threat-related information sharing, greater use of the SERC position, liaison support and public messaging support during crises, and clarification of roles from the various federal programs that have regulatory chemical security programs. This contrasted from what was identified in Chapter 2 where the literature identified other priorities such as a long-term reauthorization of the program, specific changes to Appendix A that identifies which chemicals are regulated, greater transparency in how facilities are tiered, and

concerns with emerging threats such as increased sightings of drones in or around chemical facilities. One of the areas that the literature and LEPCs in Washington did seem to show common ground was on the topic of differentiation from the other chemical security programs. The study's findings are highlighted in Table 2 and are discussed in greater detail under the headings of interpretation of findings, study limitations, recommendations, implications, and the study's conclusion.

Washington LEPC Changes to CFATS Program

There were eight key recommendations that came directly from the respondents that participated in this study regarding how to get more out of the LEPC engagement with the CFATS program. These recommendations included:

- more chemical security inspectors
- removal of overlap with other agencies
- greater LEPC participation
- greater use of the SERC
- security training to LEPC
- grant funding for equipment and training
- liaison support to engage industry
- public information support during crises

Interpretation of Findings

Theoretical Framework

Contingency Theory of Organization

Every study has a theoretical framework that guides the interpretation and analysis of the data, and this study implemented two theories to help guide its analysis. The first of those frameworks was the contingency theory of organization (Donaldson, 2001). It was this theory that seemed to fit the LEPC and emergency management culture most appropriately because they must adapt to constantly changing environments whether that is changes in participation, funding, size, or just changes from normal day-to-day routines to a much faster paced crisis such as a large chemical explosion in their community.

Donaldson (2001) defined contingency theory as not the theory that seeks out the maximum performance of the organization but rather a theory that seeks out the most appropriate performance attributes under the specific circumstances based on the current "environment, organizational size, and strategy" (p. 2). He noted two organizational styles in this context of mechanistic and organic. The style most appropriate to the normal day-to-day operations might be mechanistic or structural to facilitate information flow, assignment of tasks, and an expected flow of communications such as from the mayor's office down to the emergency manager and LEPC. In contrast, the organic structure refers to a more horizontal and participatory approach that essentially throws out the titles, structure, and rigidity of the mechanistic organizational structure and fosters creativity to allow those at much lower levels the empowerment to get the job done. The

organic structure is much more likely to foster a successful environment during a crisis that would involve both the CFATS program and the LEPCs. While organization structures largely define how a LEPC and the CFATS program might formally interact, another less visible factor had to be considered and that was whether the actual types of people involved either promoted or detracted from a productive engagement.

Organizational Culture Theory

The second key theory to frame the lens on how the data were viewed in this study was that of organizational culture theory (see Shafritz et al., 2005). This refers to the "many intangible phenomena, such as values, beliefs, assumptions, perceptions, behavioral norms, artifacts, and patterns of behavior" in an organization, or in this case, an LEPC (Shafritz et al., 2005, p. 352). It is in this context that some of the responses might best be framed such as whether the respondent identified as an emergency manager, someone from the chemical industry, or any other category. This might also be used to explain potential impediments to how organizations and agencies coordinate, collaborate, or do not perform these functions as well as other groups under similar situations.

The purpose of this study was to evaluate the CFATS program in Washington from the LEPC perspective and contribute to a gap in the literature. In this study, I conducted research that invited all the LEPCs in Washington to provide comments on the CFATS program and the LEPC-CFATS relationship to help fill that gap in knowledge as it relates specific to Washington. There was no expectation at the time of any particular

outcome such as whether it would align with what was identified in the literature review or whether it would be contradictory.

The LEPC chairs received the invites and were encouraged to share, at their discretion, within their LEPC membership, so the number of participants in the study could have been quite large as these committees can have dozens of members from a broad range of backgrounds and expertise. Some of these backgrounds or specialties, for example, include expertise in emergency management, first responders, academia, industry, lobbyists, and various government organizations at the local, state, tribal, and federal level based upon individual LEPC membership. From the data provided, however, it appeared the invites were not shared within the individual committees, or to an extremely limited amount given the total number of respondents was 11 and those were mostly from the same professional background of emergency managers.

In the Chapter 2 literature review, there were 10 commonly identified change recommendations found in existing literature for the CFATS program. These change recommendations were compared to the results collected in this study, shown in Chapter 5, Table 2. From that comparison, it is apparent that there were two commonalities from what the literature review identified and what the responding LEPCs in Washington provided. This area of overlap was primarily in the desire for more engagement by the CFATS program to the LEPCs while both also noted the potential overlap between similar regulatory programs such as CFATS with one of the EPA programs.

Table 2

Comparison of Literature Review and WA LEPC Findings

Chapter 2 findings	WA LEPC findings
1. Better information sharing to LEPCs	1. More inspectors
2. Synergy with other regulatory programs	2. Removal of overlap with EPA / OSHA
3. Inspector training	3. Greater involvement in LEPCs
4. Long-term reauthorization	4. Greater use of SERC role
5. Emerging threats (e.g., drones	5. Security training to LEPC members
6. Inherently safer technologies	6. Liaison role to help with industry communications during crises
7. Appendix A changes	7. Liaison role to help public messaging role during crises
8. Land use planning	
9. Tiering process transparency	
10. Better documentation of compliance activities	

The LEPC participation with the CFATS program was the most common theme in this research. The literature review loosely referenced LEPC coordination without specifically mentioning the LEPC. Shea (2010) discussed options that the U.S. Congress might make to modify the CFATS program, such as making some of the program's information more available (e.g., enforcement activities), stating that this could help with engagement with some stakeholder groups. A much more current government report of the CFATS program and its collaboration (Anderson, 2021) reviewed the CFATS program that noted numerous areas in its program where it requires regulated facilities to coordinate, plan, notify, or work with local law enforcement and first responders and the body most commonly available for this task in Washington would be the LEPC.

The data obtained from the Washington LEPCs was more specific about their needs and wants from the CFATS program. The data showed that LEPCs wanted the CFATS program to provide training to the entire LEPC on what the CFATS program is about, what it can offer, who to contact with the CFATS program, and other more involved services. Additional support identified in this study included help from the CFATS program with industry outreach, helping to resolve security issues, support developing security plans, and identifying the high-risk CFATS facilities within that LEPC's area.

One of the additional items that came out of this study was that some LEPCs wanted broader support (e.g., training, advising, plan writing) from the CFATS program. In the past, the CFATS program would likely only provide training to a LEPC on its regulatory program that impacted only the few CFATS regulated chemical facilities,

whereas the LEPC might deal with dozens or even hundreds more chemical facilities that were regulated by the same EPA laws that created the LEPCs themselves. From the data obtained, LEPCs expressed a desire in having CFATS training they could use that might help with all their sites and not just the few that were specifically regulated under the CFATS program. To fulfill this expanded role, the CFATS program would likely be advising and sharing security best practices, security information, security training knowledge, and more that could likely augment and compliment what is required under EPA and OSHA regulations but from an advisor and information sharing perspective based on the CFATS' emphasis of security and antiterrorism. Whether or not these recommendations are feasible is further evaluated in the next section.

Evaluative Approach

Using Bamberger and Mabry's (2020) method, the data can be discussed in the context of realistic limitations that were very applicable to this study. In this model, there are seven steps, and for the purposes of this analysis, the final step that involved returning to the client to guide them in implementation was omitted as that would fall under recommendations for future research and was not part of this study. In this analysis, I used Bamberger and Mabry's model of evaluation for planning and scoping the situation as Step 1, and then go into budget constraints, time constraints, data constraints, political and organizational constraints on both the CFATS program in Washington to meet the needs identified in this study, and then end with my conclusions.

Planning and Scoping

The planning and scoping of this analysis was this study on the LEPCs in Washington with the intent to improve both the capability of individual LEPCs but also to improve the CFATS program and how it is implemented specific to a single state. While the goal is to improve upon the CFATS program at the regional level, the planning and scoping in this context was to identify the area of the study (i.e., Washington), the program of focus (i.e., CFATS), and the needs and perspectives of as many of the LEPCs that would participate to see what the CFATS program is doing, if it is adding value, what could be changed, and potentially if it should direct its efforts elsewhere.

Budget Constraints

It was outside the scope of this study to attempt to address budget constraints of the many different LEPCs across the State of Washington, so I focused on budget constraints against the CFATS program in Washington regarding whether or to what extent its budget would limit its ability to provide the desired services identified in this study.

Some of the recommendations brought up by the LEPCs could be instituted with little or no impact to budget constraints while others likely need to be further defined to assess any true impact. Removing the overlap with EPA and OSHA is currently in progress, and the CFATS program meets routinely with them to discuss cases and align efforts. While the federal agencies do this, there needs to be a better effort to make that more transparent to LEPCs, thus the next recommendation of making greater use of the SERC program that oversees the LEPC program. The state coordinator could likely help articulate federal issues and concerns and could raise issues for the federal agencies to

address or speak to in specific meetings. Bringing such clarification to these meetings either in person, virtually, or asynchronously directly from the agency, office, and person involved would likely prove productive and allow for feedback to the information source. This engagement alone could help address the request to be more engaging with the LEPCs, but the remaining items of more inspectors and incident support roles could be problematic regarding budget constraints because pending how they are used, the number of days used, and other factors, this would like involve federal travel funds, and, while possible, it would certainly have budget constraints that would be a very clear limiting factor as to how often and how long such onsite support could be provided.

Time Constraints

The time limitations for this category are from a programmatic perspective of the CFATS program in Washington as to whether they could meet the needs and wants of the LEPC. The overlap and coordination with OSHA, EPA, and other agencies remains in place, but making that more transparent to the LEPCs could benefit from increased coordination with the SERC to bring up issues or provide feedback and that arguably would not be a significant burden on time. Inspectors in the CFATS program in Washington already attend numerous LEPC meetings, so getting more involved, engaging more, and providing additional assistance could be prioritized and the recommendation to involve the SERC more would likely add to this effort. The SERC office could help focus limited resources, such as the Chemical Security Inspectors, to specific LEPCs that needed, wanted, or could benefit most from the support in the best

interest of the CFATS program and the LEPC while reducing repeat visits to other LEPCs that didn't need, want, or value the additional engagement.

The liaison support role of communicating to the chemical industry during an incident or time of increased threat continues to progress through formal notifications directly to the regulated facilities through the CFATS chemical security portal, and the CFATS program is starting a program to engage the many more sites that fall under the program but are not actually regulated; this would help meet the communication wants from the LEPCs, but communicating how that is working and updates certainly needs to be added to the outreach and engagement strategy.

Data Constraints

In the context of what data is needed by the LEPCs based on this study, it was apparent that likely the most basic need was a better understanding of what the CFATS program is and what it could provide to the LEPCs during both stabile and unstable environments. Data resource constraints might include how the LEPC gets information as there were requests identified in this study where LEPCs wanted more routine threat-level information and support communicating with the chemical industry. If the threat level information was sent out through any of the federal databases that require vetting and layers of approval, this may be a constraint for a LEPC. Additionally, if the communications to the chemical industry were done via a secure web-based application such as what is used for the chemical industry to report their Top Screens under the CFATS regulatory requirements, it is not likely the LEPC would have access or even visibility of what the CFATS program was communicating to chemical facilities in their

community. There are certainly several federal databases that could help share threat related information to the LEPC membership and this is something that should be further explored through the SERC and subsequent LEPC engagement by the CFATS program in Washington.

Political and Organizational Constraints

For a LEPC to work directly with federal counterparts, sometimes it is as easy as calling the federal member who routinely participates in meetings or maybe that person who shows up periodically and resolve issues but other times it can involve going through numerous layers of bureaucracy at the local level and then to the various state representative that oversee the LEPC programs. From there, it could be that one federal agency has part of the information needed but must coordinate with other federal agencies or even back to a state agency not previously involved. This point came out in the study where Respondent #5 commented that the entire CFATS program should be defunded because the person saw no additional value added on top of the chemical data already received based on EPA requirements. It is possible that due to the layers of bureaucracy that the participant never saw past the single agency requirements or understood how many unique requirements numerous federal agencies have over different chemicals.

It is likely for various reasons that this person did not know enough about the CFATS program and how its list of chemicals it regulates in *Appendix A* (see Chemical Facility Anti-Terrorism Standards, 2020) is different from what the EPA regulates and for very different reasons. For example, a chemical called *Methylphosphonothioic*

dichloride is regulated under CFATS as a chemical weapon precursor security issue at just over 2 pounds and at a minimum of 30% concentration but this doesn't fall under EPA regulations so the LEPC would not likely be aware of such holdings, or other similar chemicals in their community. Getting such information requires the ability to freely cross political and organizational boundaries going from one trusted agency to another and maybe numerous other positions between them.

It is understandable that a LEPC member might think in such a myopic way with so many challenges potentially working against them to reach out to new agencies and offices and to be kept abreast of important information as the chemical preparedness profession continues to evolve not just within the chemical industry or bureaucracy that envelops it, but also with in the local governance organizations themselves. This reinforces the data obtained emphasizing training to these groups where these federal agencies need to do a better job with transparency and sharing what their programs are about and how they mesh with other similar or complimentary oversight programs at all levels of government. This is a significant concern as a LEPC with its volunteer members might have to go through numerous state and federal agencies to seek out information, training, support, and so on and this is certainly a constraint. Additionally, membership would also have to deal with pressures from their own employer, community members, special interest groups, private citizens, and elected officials just to name a few.

Conclusions

Where does all this leave us in our understanding using the adapted version of Bamberger and Mabry (2020) evaluative methodology? Its intent was to portray the

CFATS to LEPC relationship in Washington under a much more realistic framework in the context of the many pressures both programs face to help empathize and better understand opportunities to improve the relationship. The CFATS program in Washington has a very small number of inspectors and staff, this study and evaluation helped to clearly identify pathways forward that could enhance the LEPC-CFATS program engagement that would benefit both entities positively while operating within the constraints of budget, time, data, and political pressures. The study's limitations are addressed in the next section.

Limitations of the Study

In the proposal for this research, specifically in Chapter 1, there were two specific limitations to this study identified that included getting the broadest representation from LEPCs across the state and then getting appropriate participation to garner productive participation in the study. The first limitation of the study was the geographic diversity of the respondents meaning would they come from different portions of the state and not be overly represented by just the urban areas, for example. From the data collected, the respondents that answered whether they belonged to an urban or rural LEPC, the split was about half and half with four from rural LEPCs and 5 from urban areas. While it is not possible to tell if all corners of the state were represented, the primary goal listed in the proposal was to seek participation from both large and small LEPCs representing the cities and rural communities and the data shows that this was achieved and therefore should not have been a significant limitation to the geographic diversity of the participation.

The second potential limitation from the proposal was the potential to have a low response rate primarily because the topic was on anti-terrorism related policies and that might have influenced responses. While there is no way in an anonymous online survey to ascertain if this was the reason more people did not respond, Chapter 4 also noted additional competing factors that could have garnered the attention of LEPCs during the time of this study with things such as record setting temperatures, chlorine shortages, opening the state after more than a year of COVID-19 related lock down, or other unknown factors. While the data obtained certainly helps further the discussion and contribution to the body of knowledge, these limitations should be considered as it is possible or even likely that one, a combination, or even other factors contributed to the moderate to low response rate or participation in the study.

Recommendations

The LEPCs provided useful information that contributed to this study and furthered the body of knowledge on the CFATS program and its efficacy in Washington. The CFATS program in Washington should look into how it can more effectively and routinely engage the SERC program for coordination and transparency, it should use that engagement to develop a more effective engagement strategy with the LEPCs, it should look at how to share information on threats more effectively, it should help the LEPCs engage a broader group of chemical facilities (not just CFATS regulated), it should look at providing physical security training and also explore ways to help LEPCs in an incident with communications and messaging. The two bigger picture items that should be pursued, based on this study, should be to explore CFATs or chemical security related

federal grant funding mechanisms or sources and the potentiality of adding more inspectors to help make LEPC engagement more frequent and participative than it currently is with only periodic attendance.

Implications

The greatest implications for this study could be significant policy changes to the Region 10 CFATS program focusing on LEPCs in Washington. The vast majority of recommendations are already in progress to varying degrees, but their efficacy could be improved and certainly the transparency of those changes or initiatives could be shared more effectively. This study could lead to a much more vibrant and useful engagement of LEPCs in Washington where they are provided needed tools, training, and eventually maybe even funding to get training, resources, and perform their mission more effectively. Given that the CFATS program is an anti-terrorism program, making many of these fine-tuning adjustments would be good for the CFATS program in Washington and the LEPCs that want more effective engagement but the bigger goal in such effort, programmatic, and policy changes that make all the effort worthwhile is that citizen are better protected, and communities are safer.

Conclusion

The chapter provided an overview of the change recommendations obtained from Chapter 4 and expanded on them and provided context. It also took that data and stretched it to identify areas for future research that could build upon this study. It was clear that LEPCs wanted the CFATS program to provide specific skills with training, recommendations, and sharing of threat-information, but also expansion of the program.

The expansion included increases to number of inspectors to better support the LEPCs with training, planning, and incident management related support, but also stated the program would add more value with its own grant program that could bolster its ability to help improve security, training, and exercises related to chemical security such as physical security items and exercises. This expanded what was previously discovered in Chapter 2 that focused more on the CFATS program and items such as its long-term reauthorization, specific changes to the chemicals it regulated in Appendix A, and better transparency in how it tiered the facilities that submitted data that ranks them amongst four subcategories of high-risk. There was one commonality between what was found in the literature review and this study, and that was the desire for better information sharing to the LEPCs and while Chapter 2 input was somewhat vague, this study on the LEPCs in Washington added much greater specificity. The overall study helped to fill the gap in literature and highlighted key modifications that could be made between the CFATS-LEPC programmatic relationships today and identified broader changes that it could strive for to increase its efficacy that would improve it as a program, help LEPCs in the local communities across Washington, and most importantly help keep these communities possibly just a bit safer. While this study focused solely on the CFATS program in Washington, some of these takeaways might also inform the committee that takes up the next version of the program when it is reviewed by policy makers for a potential extension or reauthorization in 2023.

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