

Analysis of Psychosocial Hazards Encountered by Responders during an Event or Response that Applies the Incident Command System.

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Mandated by the federal government, the Incident Command System (ICS) is a management system designed to enable effective and efficient domestic incident management of responses to hurricanes and other natural disasters, oil spills and chemical releases, public health incidents, terrorist attacks, and other man-made and natural disasters. An exploratory study was executed to investigate relationships between six ICS-specific risk factors and seventeen psychosocial hazards in order to determine the best methods to eliminate or mitigate the impact of psychosocial hazards on the USCG responder population. A fifteen-question online survey was distributed to four USCG units. 121 USCG responders voluntarily completed the survey (response rate: 12.3%). Responses were analyzed through Statistical Analysis Software.

The following relationships were identified;

ICS / Response Factors	Psychosocial Hazards
Hurricane response	Overwhelmed/stressed by workload
Operations Section position	Witnessing/experiencing trauma
Non-Supervisory Role	Little involvement in decision-making Lack of training Lack of emotional support
Not issued Temporary Duty Orders	Lack of training
Incident Command Post location	Lack of supervision Mentally demanding work Lack of training Overwhelmed/stressed by workload
Average workday of 16 hours or more	Verbal conflict Witnessing or experiencing trauma Poor communication Mentally demanding work Emotionally demanding work

	Poor work-life balance Overwhelmed or stressed by workload
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Based on the recognized associations, the following recommendations were made to eliminate the presence or mitigate the impact of psychosocial hazards encountered during an ICS response;

Recommendations	
1.	Addition of ICS position under Command and General Staff with focus on responder wellbeing and support
2.	Encourage SOFRs to build their staff to ensure proper control of all-hazards (psychosocial) and field support
3.	Recommend SOFRs complement their training other work-life support certifications/ curriculum (i.e. operational stress control, critical incident stress management, crew endurance management)
4.	Continue promotion of the USCG stress management program
5.	Enforce a strict work-rest ration for all responders regardless of function
6.	Set and enforce maximum amount of work hours
7.	Prioritize ICS qualification and training for all-ranks
8.	Ensure supervisors pay particular attention to; workload division, proper supervision, and understanding of tasks while working in an ICP
9.	Incorporate ICS into daily work to increase familiarity and understanding
10.	Emphasize ICS qualification for promotion and advancement
11.	Ensure an evaluation is completed for all responders
12.	360-degree feedback for supervisors
13.	Prioritize reward and recognition for exceptional performance
14.	Implement mandatory compensation time following response

INTRODUCTION

Under the National Incident Management System (NIMS), the Incident Command System (ICS) is a nationally-endorsed incident management concept used on a regular basis by the public and private sector. Designed for responders, ICS uses specific terminology and procedures to standardize command and control methods, the organizational structure or Chain of Command, and position responsibilities. In addition, ICS gives responders the necessary tools to best determine appropriate response objectives, priorities, tactics, communication network, and battle rhythm. Categorical incidents that require the use of ICS include terrorist attacks, oil spills, hazardous material releases, public health incidents, securing organized public events, hurricanes, and other natural and manmade disasters. Three well-known incidents that help shaped today's ICS include the September 11th terrorist attack, Hurricane Katrina, and the Deepwater Horizon oil spill.

A sophisticated user and proponent of ICS, the U.S. Coast Guard (USCG) executes a variety of domestic and international missions that fall neatly into the ICS wheelhouse. With the core missions of maritime safety, security, and stewardship, the USCG is responsible for ports, waterways, and coastal security, drug interdiction, aids to navigation, search and rescue, living marine resources, marine safety, defense readiness, migrant interdiction, marine environmental protection, and ice operations. Due to the nature of their federal responsibilities, the USCG must be familiar with the execution of ICS in order to best respond to maritime events in an organized and efficient manner. Most notably, the USCG plays an active and leading role to initiate an organized ICS response with federal, state, and local partners, stakeholders, and trustees in order to stabilize the community following man-made and/or natural disasters.

A typical ICS incident involves a fast operational tempo, long working hours, and an instantaneous coordination of resources and individuals from a variety of agencies, organizations, and backgrounds that bring their own set of priorities, needs, and response goals and objectives. While ICS intends to establish structure and controls to align these differences, a realistic Incident Management Team (IMT) may run into a variety of conflicts and operational difficulties that create a variety of psychosocial hazards for those in command and field level positions. Such potential psychosocial hazards faced by responders may include cognitive and emotional demands, long working hours, worker conflict, lack of supervision/support, isolation, inadequate reward and recognition, and lack of job control. Operationally, USCG personnel may also experience traumatic events while responding to an incident in the field.

Given the frequency of ICS use, USCG responders are highly susceptible to a variety of psychosocial hazards; thus, it is essential to identify potential risk factors specific to the ICS response and organizational construct that may produce more or select psychosocial hazards. By identifying these risk factors and their subsequent impact on the USCG community, leadership and ICS safety personnel may enhance the current Health and Safety (H & S) Management System to take in account the study's findings. In addition, ICS leadership will also be armed with recommended practices to control and mitigate the impact of identified psychosocial hazards on their IMT.

Defined by the International Labour Organization in terms of "interactions among job content, work organization and management, and other environmental and organizational conditions...and the employee's competencies and needs," psychosocial hazards are aspects of work in its social and organizational context that have the potential to cause psychological or physical harm (WHO 2010, ILO 2016). Tied closely with work related stress, psychosocial hazards may

cause a negative response in workers when presented with “work demands and pressures that are not matched to their knowledge and abilities and which challenge their ability to cope” (WHO 2003). While the work landscape is continuously changing, there is a general consensus among research and literature that summarizes the nature of most psychosocial hazards. Table1 presents these findings in addition to the variables and factors contributing to the psychosocial hazard category found in the occupational setting (WHO 2010).

Table 1: Nature and Contributing Factors of Occupational Psychosocial Hazards	
Nature	Contributing Factors
Job Content	Short work cycles with lack of work variety “Fragmented or meaningless work” Underuse of worker skills and experience
Workload & Work Pace	Overload or underload of work Deadline-driven Time pressure
Work Schedule	Shift/night work Unpredictable schedule Long hours
Job Control	Low or no impact in decision-making Low control over workload, pace, or schedule
Environment & Equipment	Inadequate or unsuitable equipment, PPE Poor work conditions
Organizational Culture & Function	Poor communication Lack of emotional support Disagreement
Work Interpersonal Relationship	Isolated work Poor working relationships Conflict Harassment
Role in Organization	Role ambiguity Supervisor status
Professional Development	Career uncertainty Lack of training Job insecurity Poor pay
Home – Work Interface	Conflicting demands between home and work Lack of support from family

Like physical work hazards in the workplace, psychosocial hazards manifest themselves within the occupational setting through an expected etiological model that relates associated exposure to occupational hazards with the employee's health and safety (WHO 2010). Cox, Griffiths, and Rial-González (2000) details how exposure to both psychosocial and physical hazards may impact the physical, psychological, and/or social health of the employee through direct and indirect pathways. Because of this impact to worker health, the employee's work performance may be negatively influenced and will contribute to poor productivity and results as an organization.

Psychosocial hazards can cause physical, psychological, and social health impacts to the worker. As the primary factor produced from psychosocial hazards and a direct influence on the severity and prevalence of health effects, worker stress is a result of the interaction between the worker and his/her occupation and the lack of fit between the individual's' needs and demands with their existing work environment (WHO 2010). Long-term consequences of workplace psychosocial hazard exposure in addition to contributing variables such as individual characteristics and stress response are psychological and social as well as physical. Psychologically and socially, a worker may experience changes to their mental health causing family problems, sleep disturbances, sexual dysfunction, and depression, cognitive impairment, and changes in social and behavioral health such as greater alcohol and drug abuse, increased cigarette smoking, accident proneness, and violence (Quick, Horn and Quick 1986). This study will not assess the physical, psychological, and social impacts of USCG members when exposed to psychosocial hazards during ICS responses.

METHODS

An in-depth review of current policy was executed including the review of general response safety and health management practices as related to psychosocial hazards and ICS-specific policy maintained by ICS Program Managers. Based upon the review of policy, a Strength-Weakness-Opportunity-Threat (SWOT) analysis was completed to highlight the current state and gaps in the USCG’s H & S Management System in respect to psychosocial hazards. The SWOT analysis is a comprehensive process that produces information to be used in matching an organization’s goals, processes, and capabilities to “the social environment in which it operates” (Morrison 2016). While there is no standardized method, the SWOT analysis was conducted based on best practices in business and industry to assess the strengths, weaknesses, opportunities, and threats of the USCG H & S Management System during ICS events as related to psychosocial hazards.

A survey was designed and implemented to assess ICS-related variables with the frequency of common types of psychosocial hazards. Using Statistical Analysis Software (SAS), cross-tabulation frequency tables were constructed, examining the relationship between an ICS /Response factor and a specific psychosocial hazard. Table 2 outlines the various ICS/Response Factors and psychosocial hazards.

Table 2: Variables Used for Frequency Tables with Crosstabulation		
ICS/Response Factors	Psychosocial Hazards	
Type of Response	Verbal Conflict Between Members	Lack of Supervision
ICS Section	Inadequate Reward / Recognition	Lack of Emotional Support
Supervisor Role	Witnessed/Experienced Trauma	Lack of Physical Support
Work Location	Poor Communication	Lack of Supervision
Average Workday Length	Little Decision-Making Involvement	Lack of Training
-	Mentally Demanding Work	Isolated Work
-	Emotionally Demanding Work	Night Work
-	Poor Work-Life Balance	Inconsistent Shift Work
-	Overwhelmed/Stressed by Workload	

Emphasizing the fact that this was an exploratory study, the chi-square test was used as the method of statistical analysis to determine how likely it is that an observed distribution is due to chance and measures how well the observed data distribution fits the expected distribution if the variables are independent (Ling 2008).

RESULTS/DISCUSSION

Outlined in Table 3, several relationships were identified between select psychosocial hazards and the ICS / Response factors after statistical and non-statistical analysis. These results are the foundation to improve the ICS H & S Management System and were used to recommend controls in order to eliminate, mitigate, and/or administratively control identified psychosocial hazards.

Table 3: ICS/Response Factors & Psychosocial Hazard Associations	
ICS / Response Factors	Psychosocial Hazards
Response to hurricane	Overwhelmed/stressed by workload
Serving in Operations Section	Witnessing/experiencing trauma
Working as Non-Supervisor	Little involvement in decision-making Lack of training Lack of emotional support
Not issued Temporary Duty Orders	Lack of training
Working in Incident Command Post	Lack of supervision Mentally demanding work Lack of training Overwhelmed/stressed by workload
Average workday of 16 hours or more	Verbal conflict Witnessing or experiencing trauma Poor communication Mentally demanding work Emotionally demanding work Poor work-life balance Overwhelmed or stressed by workload

Type of Response

Based upon the cross-tabulation results, hurricane and natural disaster events produced a significantly higher report rate of being overwhelmed or generally stressed by their assigned workload (31.2%) in comparison to those responding to planned events (15.4%) or oil spills/chemical releases and/or marine casualties (19.2%). Hurricane and natural disaster responses are both proactive and reactive. Once a hurricane or extreme weather event is forecasted to impact a certain area, the USCG focuses on port readiness in attempt to stabilize coastal infrastructure in hope to reduce the response needs following a natural disaster. Unless aggressive planning has been initiated, local USCG members are typically the only individuals available to complete such time-consuming and comprehensive tasks. Immediately following the disaster, the USCG makes every effort to identify, respond, and mitigate the disaster's impact on the community through the simultaneous response of search and rescue maritime transportation, aids to navigation, facility and vessel inspection, and marine environmental response operations. These activities may take place both day and night and require personnel, planning, logistics, and equipment to support these complex missions. Therefore, personnel are highly susceptible to stress and could easily become overwhelmed by their assigned workload and responsibilities.

ICS Section

A possible relationship was identified between witnessing or experiencing traumatic events and serving under the Operations Section. With a p-value of 0.0232, the variable of witnessing/experiencing a traumatic event and working within the Operations Section are not independent. Traumatic events are defined as an experience that causes physical, emotional, psychological distress, or harm or an event that is perceived and experienced as a threat to one's

safety or the stability of one's world. Given the USCG's line of work in search and rescue, marine environmental response, and law enforcement, personnel in the field are highly susceptible of personally witnessing or experiencing trauma; thus, since the majority of individuals assigned to the Operations Section are deployed into the field, they are highly likely to witness/experience traumatic events especially during ICS events like hurricanes, floods, oil spills, and marine casualties. Therefore, the identified association is valid and applicable in USCG ICS response environment.

Supervisor Role

Four potential relationships were identified and supported within a real-world context indicate possible relationships between a supervisory role and little involvement in decision-making, lack of training, lack of emotional support, and poor communication. In the simplest of terms, a supervisor is someone whose job is to oversee other individuals (non-supervisors) as they work. The ICS organization incorporates various positions and responsibilities that are a combination of supervisor and support roles; supervisors overseeing operations and non-supervisors conducting assigned tasking. In reflection of this role division, 29.6% of non-supervisors reported little involvement in decision-making while in comparison to 7.8% of supervisors. Supervisors, whether operating in a Chief, Director, Leader, or Supervisor capacity, are responsible for determining, assigning, and fulfilling objectives and assignments; thus, heavily involved in response management. While it is encouraged to strengthen the decision-making abilities of non-supervisors to promote their professional and personal development, members working under a supervisor in a non-supervisor capacity may not have the proper experience, training, or knowledge to make such decisions. Therefore, the distinction between the involvement of supervisors vs. non-supervisors regarding response decisions is evident.

Potentially linked to the responsibility with decision-making (though not tested), 22.7% of non-supervisors reported improper or lack of useful training to complete their work in comparison to a small percentage of supervisors (9.1%). Supervisors are expected to have the sufficient training and expertise to fulfill their role. In ICS, all supervisors (whether holding a Chief, Deputy, Manager, Leader, or Supervisor titled position) are required to complete formal, classroom training, practical experience measured through specific performance qualification standards, and, in most cases, a verbal interview or board that tests the knowledge and hands-on experience of the future supervisor. Given the comprehensive formal and informal learning methods for supervisors, it is not surprising that supervisors reported receiving lack of training. On the other hand, non-supervisors may solely rely on their practical experience to perform their tasking sans the requirement for formal training. Also, given the nature of many ICS events that require “all hands-on deck” or need for the participation of all in-house USCG members no matter what level of experience or knowledge, non-supervisors may be thrown into unfamiliar roles and positions or have never participated in a coordinated ICS event previously and are unaccustomed with ICS-specific procedures and tempo.

While not supported through the Chi-Square Test due to lack of statistical power but identified as a point of interest following the cross-tabulation analysis, a higher percentage of non-supervisors (18.6%) reported a lack of emotional support in comparison to 5.2% of supervisor. Though receiving ample physical support, 18.6% of non-supervisors felt that they did not have sufficient support for their emotions and wellbeing during the ICS response, highlighting a significant gap to address. As related to human relations and management of responder wellbeing, ICS policy dictates that commands may assign multiple technical specialists to include a Chaplain, Sexual Assault Response Coordinator, Human Relations

Technical Specialists, or Family Assistance Technical Specialists. However, such positions are at the discretion of the command and ICS leadership to include and promote within the ICS organization. The USCG has adopted various programs that can directly influence responder wellbeing including the Stress Management Program and Critical Incident Stress Response Program operating out of national-wide Work-Life Regional Offices. As interpreted by the survey response, supervisors may personally feel that they are receiving substantial emotional support; however, their subordinates are not experiencing a similar sentiment. Thus, a better understanding and availability of emotional support venues for all responders including non-supervisors is needed regardless of the type of event. In addition, ICS Supervisors should receive training to learn how to better support their subordinates especially during high-stress, high-otempo events / responses.

Communication continues to be a struggle and recommendation for improvement in almost every incident response. 34.7% of supervisors reported poor communication during a response in comparison to 18.2% of non-supervisors. Such a significant disparity may be related to the heightened awareness of communication protocol by supervisors and their innate need for fluid communication methods. A supervisor's daily responsibilities revolve around communication including communicating operational tasks, receiving status subsequent reports, and articulating their progress and respective needs up the ICS Chain of Command. Overall, non-supervisors may not be as significantly impacted by poor communication since they are only focusing on their personal assignments.

Temporary Duty Orders Assignment

One potential relationship was identified between a temporary duty order assignment and lack of training. Not surprisingly, individuals who were not on orders reported having the lack of necessary training to complete their training in comparison to those on orders. Typically, individuals who are issued orders to join a response are selected based upon their training and qualifications; thus, in theory, having the proper training to complete their work. On the opposite spectrum, individuals who are local to the USCG unit operating the ICS response may not have had the training opportunity or skillset required to do their assigned task; yet, because of their geographic assignment and the USCG's general "all-hands on deck" mentality, these individuals are required to participate and quickly learn the necessary requirements.

Work Location

Four possible relationships were identified between work location and lack of supervision, mentally demanding work, lack of training, and feeling overwhelmed/stressed by workload. For the purpose of the survey, lack of supervision was defined as working with an unqualified supervisor or ineffective supervision. Identified as a possible association, 23.9% of individuals working in the ICP reported a lack of supervision compared to only 6.1% of field workers. Related to lack of supervision and qualifications, 18.2% of those individuals working in the ICP felt that they did not have the proper training to accomplish their assigned work in comparison to only 3.0% in the field. On a positive note, the relationship could be interpreted that those working in the field, an inherently more dangerous environment, are receiving substantial supervisory support and direction as well as the proper training to complete their work. However, while in the ICP, individuals reported greater lack of supervision as well as insufficient training to complete their

job. The ICP is the hub of all planning and administrative work supporting the field response with all five ICS sections represented. The higher reports of lack of supervision and insufficient training may be due to the complex nature of the ICS organization and position requirements. In addition, for many responders, ICS is used infrequently and only when a response dictates; therefore, individuals working in the ICP, trained or not, may not be comfortable in their role or familiar with all aspects of ICS, and/or they are inexperienced due to the sporadic nature of ICS use.

An additional interesting finding, 61.0% of individuals working in the ICP reported mentally demanding work compared to 37.5% of individuals primarily in the field. Considering the immense amount of tactical planning and comprehensive administrative/logistical functions taking place in the ICP, it is not surprising that almost two-thirds of ICP workers reported work that required a significant amount of information processing. Related to the mentally demanding jobs within the ICP, 29.6% of ICP workers reported feeling overwhelmed/stressed by their workload compared to 12.1% of those in the field. With a regimented planning and meeting schedule, tight submission deadlines, and thirty-six ICS-specific forms to be completed and revised/reviewed on a daily basis, individuals working in the ICP are constantly engaged in detail-oriented tasks, some repetitive in nature, to be completed within a specific timeframe. While the field may also include work requiring significant cognitive demands and a workload that could be overwhelming, operational responders in the field have a greater amount of flexibility. Typically, workers in the field are given straight-forward assignments that may or may not present intellectual challenges while executing a designated mission.

Average Length of Workday

Of the 17 psychosocial hazards surveyed, seven were associated with the average length of the workday; verbal conflict, witness/experience trauma, poor communication, mentally demanding work, emotionally demanding work, poor work-life balance, and overwhelmed/stressed by workload. Those who worked an average of 16 hours or more during the day consistently reported the highest rate among the seven psychosocial hazard with the lowest rate being those working 12 or less hours. The relationship between the average length of the workday and the psychosocial hazards of mentally demanding work, emotionally demanding work, poor-work life balance, and overwhelmed/stressed by workload produced associations with the greatest statistical power.

Almost all individuals working 16 or more hours (93.3%) reported engaging in mentally demanding work compared to 61.1% of those working between 12-16 hours, and 34.7% working 12 or less hours. The cognitive demanding work is substantial for those working extremely long work hours perhaps due to the emergency and chaotic nature of a first response following a natural or man-made disaster. Especially early in a response, personnel and adequate resources may not be available; thus, requiring available staff to creatively accomplish various operations through innovation and long working hours. In line with the mental demands and immediate needs of an emergency, 40.0% of those working 16 or more hours and 36.4% working 12-16 hours were overwhelmed/stressed by their workload compared to only 6.0% of those working 12 or less hours. Such an observation notes the potential overuse of personnel during responses in which elicits individuals to become overwhelmed or stressed. In addition, the large workload itself assigned may cause individuals to work longer than 12 hours a day.

Comparing the responses, individuals who worked longer than 16 hours during a response reported a significantly higher rate of poor work-life balance compared to those working less than 16 hours (60.0% [16 or more hours] vs. 25.9% [12 - 16 hours] vs. 10.0% [less than 12 hours]). Individuals who work significantly longer hours (16 hours or more) are incapable of dedicating time and quality attention to their personal needs and obligations like family. Such poor work-life balance can significantly impede a responder's overall quality of life.

A potential relationship was identified between the average length of workday and emotionally demanding work. 66.7% of those who worked 16 hours or more reported emotionally demanding work compared to 34.6% of those working 12 - 16 hours and 14.3% working less than 12 hours. These rates can be compared to those who witnessed or experienced trauma during a response (46.7% 16 or more hours, 13.0% 12 - 16 hours, and 6.0% working less than 12 hours). Following natural and manmade disasters, USCG responders may engage in or plan work assignments that illicit an emotional response and/or involves trauma such as responders engaging in search and rescue operations or oil spill clean-up. However, the association is unclear due to lack of evidence to defend the distribution of responses comparing the different lengths of an average workday during a response. Speculation may defend that individuals who worked 16 hours or more were engaged in work immediately following a natural or man-made disaster in which there was a higher incidence of traumatic events and emotionally demanding work such as search and rescue that may involve human remains, mass casualty situations, or significant community or environmental devastation. Continuing with the assumption that 16 hour workdays were only occurring immediately following an incident, responders may also experience poor communication due to the lack of organization or planning of resources during the chaotic post-response or because of poor or missing infrastructure to support physical communication.

CONCLUSION

Proposed recommendations are based on findings from the SWOT, statistical analysis of psychosocial hazards and risk factors, and feedback from USCG responders. While otherwise noted, these recommended controls are directed towards the Command and General Staff of an ICS response (Unified Command) and ICS policy-makers and trainers. Administrative in nature, recommendations are designed to eliminate, mitigate, or administratively control the psychosocial hazard associated with a respective ICS / Response factors.

Recommendations	
1.	Addition of ICS position under Command and General Staff with focus on responder wellbeing and support
2.	Encourage SOFTs to build their staff to ensure proper control of all-hazards (psychosocial) and field support
3.	Recommend SOFRs complement their training other work-life support certifications/ curriculum (i.e. operational stress control, critical incident stress management, crew endurance management)
4.	Continue promotion of the USCG stress management program
5.	Enforce a strict work-rest ration for all responders regardless of function
6.	Set and enforce maximum amount of work hours
7.	Prioritize ICS qualification and training for all-ranks
8.	Ensure supervisors pay particular attention to; workload division, proper supervision, and understanding of tasks while working in an ICP
9.	Incorporate ICS into daily work to increase familiarity and understanding
10.	Emphasize ICS qualification for promotion and advancement
11.	Ensure an evaluation is completed for all responders
12.	360-degree feedback for supervisors
13.	Prioritize reward and recognition for exceptional performance
14.	Implement mandatory compensation time following response

USCG responders are exposed to a variety of psychosocial hazards dependent on several ICS / Response factors, which are involved/contribute to each response. As such, ICS Command and General Staff and supervisors should invest particular attention to the Operations Section, non-supervisory work/roles, ICP location, and workday length (over 16 hours). Attention should

include institution of recommended controls in order to mitigate/eliminate associated psychosocial hazards. Uncontrolled psychosocial hazards have the potential to cause various physical, psychological, and social health impacts to the responder; thus, it is our duty as leaders and response experts to protect our workforce.

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