



Impacts of Technological Disasters¹

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Technological disasters such as the Deepwater Horizon/BP oil spill can be stressful. This publication reports on the impacts of technological disasters and offers some guidelines for families that are dealing with stress related to the oil spill.

What Is a Technological Disaster?

A technological disaster is an event caused by a malfunction of a technological structure and/or some human error in controlling or handling the technology. The effects of a disaster may be long lasting and can endure for years. However, symptoms may appear gradually, and impacts may not be seen immediately.

All types of disasters are challenging, but technological disasters tend to be even more difficult for the following reasons:

- The threat cannot be anticipated: A technological disaster is sudden, unexpected, and unpredictable.¹
- People are responsible: Victims of technological disasters tend to feel anger toward people who were responsible for accidents that may have been prevented.¹

- Community breakdowns and conflict may result: Technological disasters can create disputes within communities.²

Technological disasters tend to affect specific occupational groups. In the case of the Deepwater Horizon/BP oil spill, commercial seafood producers and processors and those employed in the tourism industries were particularly impacted.

Examples of Technological Disasters

In addition to the Deepwater Horizon/BP oil spill, radiation leaks are another example of a technological disaster, such as in the recent case of the Fukushima Daiichi Nuclear Power Station in Japan and previous accidents at Chernobyl and Three Mile Island. Fires or explosions, such as the Station Nightclub fire in Warwick, RI, that was caused by a pyrotechnics malfunction, are also examples of technological disasters. These examples all have differing characteristics and effects on the environment and residents of the immediate disaster area.

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Effects of Technological Disasters

Technological disasters are stressful, especially because they are unpredictable. Individuals, families, and communities are affected. Some of the results include income loss, loss of job security, uncertainty about the future, family conflict, and stress.

In particular, post-traumatic stress disorder (PTSD), depression, and anxiety symptoms were common responses to a disaster similar to the Deepwater Horizon/BP oil spill, the Exxon Valdez oil spill.³ Impacts may persist over time for some individuals while others show resilience earlier.⁴

Individual Stress

Individual stress from a disaster may result in some of the following symptoms:

- Emotional: anxiety, shock, disbelief, fear, irritability, anger, sadness, depression, resentment, guilt, shame, and nightmares⁴
- Cognitive: confusion, disorientation, decreased attention span, memory difficulties, trouble concentrating at work, and self-blame⁴
- Physical: muscle tension, aches, fatigue, restlessness, reduced libido, appetite change, and trouble sleeping⁴
- Behavioral: increased alcohol or drug use, heavier smoking, increased arguing or conflict with family members, withdrawal, and suicide attempts

Most individuals do not show all of these symptoms, but it is common for those under a high degree of stress to show at least one or two. Those who are experiencing a large number of symptoms or those whose symptoms are impacting their ability to function in daily life should seek professional assistance. Not only can high levels of stress have a negative impact on the individual, but the poor functioning that often results from such stress could also have long-term impacts on children and the family as a whole.

Family Stress

Marriage and partnerships have the potential to be negatively affected by stress following a disaster. For example:

- Couples can experience difficulties arising from loss of trust, irritability, withdrawal, or isolation.⁴
- Women tend to feel marital stress following a disaster.⁴
- Women also absorb their husbands' stress more powerfully than their husbands absorb theirs.⁴

Children's Stress

The ways in which children respond to a disaster depend in part on age. Below, separated by age range, are some typical behaviors that might be exhibited by children under stress.

Preschool age (1–5) symptoms of stress:

- Acting younger through behaviors such as thumb sucking and wetting the bed⁵
- Expressing feelings of helplessness⁴
- Struggling with understanding the disaster⁴
- Exhibiting behavioral problems such as crying, throwing tantrums, behaving aggressively, or being defiant
- Changing sleeping and eating patterns

School age (5–11) symptoms of stress:

- Acting younger through behaviors such as asking their parents to dress them⁵
- Having trouble focusing on school work⁶
- Displaying aggressive behavior due to increased anger⁴
- Exhibiting behavioral problems such as withdrawal, tearfulness, and defiance

Adolescent (12–18) symptoms of stress:

- Becoming less interested in activities previously enjoyed⁵
- Engaging in risky behavior⁵
- Withdrawing from friends, which could lead to breakdowns in relationships⁴

It is important to note that children tend to deal with stress and loss differently than adults, and their expression of stress may come out in more subtle ways. It is also important to remember that a child's ability to understand the impact of a disaster is often limited, particularly for younger children. Although children tend to be fairly resilient in dealing with adversity, children repeatedly exposed to trauma, such as those who live in disaster-prone areas or in places where there is recurring violence, are at higher risk for the development of mental health problems.⁷ Not all children are resilient, so it's important for parents to pay attention to children's reactions and provide the support and reassurance they need.

Guidelines for Dealing with the Stress of a Technological Disaster

Individuals are advised to do the following:

- Maintain routine as much as possible.⁸
- Reduce exposure to media covering the event.
- Stay healthy and find healthy ways to reduce stress, such as doing things outside, getting exercise, and doing stress reduction exercises.⁸
- Seek accurate sources of information to better understand the situation.⁸
- Talk to someone you trust.
- Keep a positive perspective—you can get through this!
- Seek professional help if you are feeling depressed, anxious, or have trouble controlling your emotions.

Couples are advised to do the following:

- Talk with each other about what they are going through.

- Be patient with each other.
- Discuss how bills will be paid if there has been a job loss; develop a plan.
- Seek counseling if the relationship is under too much strain.

The impact of any disaster on children depends in large part on how adults in the home respond.

To minimize the stress for children, parents are advised to do the following:

- Limit watching television coverage of the disaster.⁶
- Answer all questions a child may have without lying and using words a child can understand.⁶
- Stay positive and focus on how things will get better.⁶
- Know when to seek professional help for children; significant behavioral changes, particularly those lasting for longer periods of time, may indicate that a child is struggling.⁶

Bouncing Back: Resilience in Disaster Situations

People who go through a disaster often experience symptoms of distress, such as depression and anxiety. Usually these symptoms subside over time. If an individual has been feeling very distressed for more than 6 months to a year, and if the symptoms are negatively impacting his or her ability to function, it is important to seek help from a health care provider or a counselor.

Some research on disasters shows that the individual's belief in the ability to cope is more important for a resilient outcome than concrete coping strategies.⁴ Children have a natural tendency toward resilience, especially at younger ages, because they are not yet able to fully comprehend the implications of a disaster.⁷ Although this is reassuring to parents, it's also important for parents to realize that when they are under stress, they may overlook children's symptoms. Parents play a key role in children's resilience, providing essential emotional support, reassurance, and safety.

Notes

1. Weisaeth, L., & Tonnessen, A. (2003). Responses of individuals and groups to consequences of technological disasters and radiation exposure. In A. E. Norwood (Ed.), *Terrorism and disaster: Individual and community mental health interventions* (pp. 209–235). New York, NY: Cambridge University Press.
2. Picou, S., Marshall, B., & Gill, D. (2004). Disaster, litigation, and the corrosive community. *Social Forces*, 82(4), 1497–1526.
3. Arata, C., Picou, S., Johnson, G., & McNally, T. (2000). Coping with technological disaster: An application of the conservation of resources model to the Exxon Valdez oil spill. *Journal of Traumatic Stress*, 13(1), 23–39.
4. McGinn, L., & Spindel, C. (2007). Disaster trauma. In F. Dattilio & A. Freeman (Eds.), *Cognitive-behavioral strategies in crisis intervention* (pp. 399–427). New York, NY: The Guilford Press.
5. Substance Abuse and Mental Health Services Administration. (2010). *Tips for talking to children & youth about the oil spill disaster: A guide for parents and educators*. Retrieved from http://www.samhsa.gov/disaster/docs/Guide_Parents_Educators_EG_508.pdf.
6. Talking with children about disasters. (2004). In Evans, G. D. & Wiens, B. A. (Eds.), *Triumph over tragedy: A community response to managing trauma in times of disaster and terrorism* (2nd ed., pp. 183–185). Gainesville, FL: University of Florida National Rural Behavioral Health Center.
7. Williams, R., & Alexander, D. (2009). Conflict, terrorism, and disasters: The psychosocial consequences for children. In A. Buma, D. Burris, A. Hawley, J. Ryan, & P. Mahoney (Eds.), *Conflict and Catastrophe Medicine* (pp. 553–567). London, England: Springer.
8. Stress management for adults. (2004). In Evans, G. D. & Wiens, B. A. (Eds.), *Triumph over tragedy: A community response to managing trauma in times of disaster and terrorism* (2nd ed., pp. 183–185). Gainesville, FL: University of Florida National Rural Behavioral Health Center.