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### Train Derailment, Toxic Exposure, Psychiatric Responses

By Dale E. Panzer, MD

*On February 3, 2023, a freight train derailed near the Ohio/Pennsylvania state line. The AP reports that 10 of the 50 cars carried hazardous materials. Authorities have launched a federal investigation, and air quality is being monitored. Evacuation orders were issued immediately over concern of a possible explosion. Further away, residents were asked to shelter in place.*

--Source, AP News reporting dated 2/4/23<sup>1</sup>

When a train carrying hazardous materials derails, there is much concern in the local community. The recent derailment in Ohio reminds us that these events impact first responders and the community. A 2012 train derailment in Paulsboro New Jersey, released the chemical vinyl chloride into the air. I was asked as a psychiatrist and disclosed expert witness to assess first responders and community members and provide trial testimony.

Based on these interviews and my participation in another class action hazardous material chemical spill due to a train derailment - I gave deposition testimony that helped resolve the case without trial - I have observed several themes:

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<sup>1</sup> Not a quote. Material summarized from AP reporting. Associated Press coverage. Associated Press. (2023, February 4). **50-car train derailment causes big fire, evacuations in Ohio**. AP NEWS. Retrieved February 7, 2023, from <https://apnews.com/article/pennsylvania-ohio-evacuations-fires-5d399dc745f51ef746e22828083d8591>

Since the February 4, 2023, reporting, more has been learned about the derailment, chemicals carried, and containment. The information at the beginning of this article is intended to summarize the derailment but is not a source of current news.

## **Anxiety in the Face of Uncertainty and Fear**

Immediately after a catastrophic event there are initially many unknowns and anxiety is typically high.

Immediate thoughts include worry about an explosion and, if there are fires, putting out the fire to limit damage and the spread of smoke that may contain toxic particles. Residents and first responders have differing and overlapping reactions to the danger.

### **First Responders**

First responders are concerned about their safety and rely on properly functioning hazardous material equipment. It may also take time to determine a safe perimeter, particularly since immediate information about the nature of the toxic substance isn't always available.

### **Community Response**

The local community is understandably alarmed. The first sign of the incident is often hearing a loud noise that cannot be identified. This is unsettling for most people.

Soon a black cloud is visible, which can lead to a host of imaginations about what happened.

For some, their first inclination is to flee but this can be problematic if roads are blocked off. Others shelter in place, but if too close to the accident site, this risks exposure to the residue of the fire. In both scenarios, anxiety is high.

### **Evacuation and Getting Out Safely**

When an order comes to evacuate the area, many readily comply if they are able. Concern for potential health consequences often heightens.

Evacuation can be difficult if one has an infirm family member or a pet. Anxiety and fear can ratchet up. Sometimes pets are left behind, and retrieving a pet becomes a focus of an evacuee's worry. They may also worry about damage to their homes.

Whether it's a train derailment or natural events like hurricanes, wild fires, floods, blizzards, or earthquakes, people may stay to protect their home, even if an evacuation order has been issued. Anxiety and fear can impact decision-making.

### **Anxiety about Housing**

Hotels may be identified for evacuees but limited information in the initial hours is a source of group worry. For some, the stress of living away from home for days or longer is unsettling. The emotional burden might be complicated by caring for young children or elderly family members in such a setting. There are so many elements of daily life that are upended that each person's situation produces a unique reaction.

## People Recover Differently

Most people successfully negotiate the challenges described. Experiencing mild-moderate stress and anxiety appropriate to the situation is not reflective of a diagnosable psychiatric or psychological condition.

Their distress is time-limited, and once back in their homes, they go through a natural recovery process.

Others report persistent increased anxiety and sometimes depression related to changes in their life circumstances. Individuals living closer to the chemical spill and first responders are perhaps more vulnerable to anxiety and potential PTSD.

## PTSD

Not every trauma triggers PTSD. In any frightening circumstance, a stress response is not surprising. Later, symptoms can change, worsen or improve. Or they may not exist at all.

According to the DSM-5<sup>2</sup> PTSD *may* occur if an individual experiences trauma in which there was a reasonable fear of imminent or actual bodily harm or sometimes witnessing this. Such an assessment can only be made individually and generalizations about groups exposed to trauma are unwarranted.

An individual also needs to meet other specific DSM-5 criteria before a diagnosis of PTSD is made. Evidence of hyperarousal,<sup>3</sup> negative cognitions, avoidance behavior and re-experiencing of trauma are required to diagnose PTSD.

## PTSD vs. Adjustment Disorder

A differential diagnosis should include an Adjustment Disorder in which anxiety and depressive symptoms occur within the first three months and exceed what is reasonably expected. Symptoms must also lead to a clear change in interpersonal, school or occupational functioning.

## Recovery and Mitigation of Anxiety

In my experience, the extent to which an individual resumes their previous level of activity and functioning often determines how quickly they recover.

Further, misunderstandings or false assumptions are commonly a source of heightened anxiety. For example, what caused the event? Could it happen again? What will be the long-term impact on one's life and that of loved ones? Are there health consequences?

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2 American Psychiatric Association (Ed.). (2022). *Diagnostic and statistical manual of mental disorders: DSM-5-TR* (Fifth edition, text revision). American Psychiatric Association Publishing.

3 Symptoms of hyperarousal include, but are not limited to, excessive vigilance, startle response, difficulty with sleep, concentration, and/or memory.

Once more is known about the nature of the chemicals and the cause of the derailment, it can be relieving. But, when experts disagree on the effects of a chemical spill, it can be distressing. It is difficult for most individuals to make sense of such media reports.

### **Civil Litigation and the Psychiatric Expert Assessment**

When individuals remain distressed about the events and a civil lawsuit is filed, plaintiffs may make a claim for emotional damages. In these cases, a psychiatrist must perform a forensic assessment to determine the cause of their ongoing distress. Is their emotional distress related to the chemical spill or other stressors? How does the plaintiff's current mental state compare to before the accident? Evidence-based answers to these questions can determine a prognosis and guide any medically necessary treatment.

While it is common to litigate these matters in class action suits, each case and each person is unique, and warrants an individual assessment - expert witness findings aid the trier of fact.

#### About Dr. Panzer

Dr. Panzer testified in federal court in a class action case involving a train derailment leading to public chemical exposure. He also gave deposition testimony that helped resolve another class action case of a chemical spill due to a train derailment.

Dr. Panzer is a graduate of Duke University with over 25 years of clinical experience and decades of experience issuing findings and testimony as a Psychiatrist and Brain Injury Medicine specialist in civil litigation, class-action lawsuits, criminal cases, and Probate matters.

He is Board-Certified in Psychiatry and Brain Injury Medicine by the American Board of Psychiatry and Neurology and has opined in hundreds of medical-legal matters in his career, for plaintiff and defense.

Dr. Panzer serves on the Faculty of Drexel University and is an invited Speaker to PA Bar CLE programs.