

Canada's "Toxic Bus": The New Challenge for Law Enforcement in the Post-9/11 World/Mass Psychogenic Illness

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Talk of the devil, and he is bound to appear.

—Proverb

Episodes of mass psychogenic illness are challenging under the best of circumstances. Typically incubated in an atmosphere of fear and uncertainty, the initial diagnoses are often contentious, and it takes time for environmental tests to be processed. Even when results come back negative and a psychogenic cause is the obvious assessment, there is often a backlash from victims and community members, who resent the "mass hysteria" label, which is typically viewed as something that happens to others. For this reason, cases are often officially left unresolved under the guise of "mystery illnesses" or possible terrorist attacks, as occurred in the following Canadian case, which documents the caveats faced by law enforcement and emergency medical personnel, resulting in an inefficient use of time and resources, and unnecessary public anxiety.

The Episode

On Tuesday 25 May 2004, at approximately 1 p.m., a passenger walked to the front of public TransLink bus #98 in downtown Vancouver, British Columbia. As "the Richmond Express" came to a halt at the intersection of 49th Street and Granville Avenue, the disembarking man made a cryptic remark. As one passenger recalled, "He said how's your day going... and the bus driver said good. Then the man said it won't be for long" ("Passenger" 2004).

As the driver continued his route, he began to feel nauseated, and later vomited after travelling 10 kilometres from where the man had stepped off. He then asked if any passengers felt ill. When one replied affirmatively, he steered the bus to the roadside and radioed for medics, fearing a chemical or biological attack. As the two responding paramedics began to treat the driver and hear his version of events, they too fell ill. Others arriving on the scene also felt sick. The incident made headlines around the world as a possible terrorist attack and became the focus of a major investigation that would become known as "the toxic bus case," or police file #04-128479.

Immediately after the incident, 19 people, including the driver, passengers, emergency personnel, and journalists, were briefly quarantined. Air quality tests and a forensic examination of the bus were unremarkable. Vancouver Police searched for the suspect: an olive-skinned male in his mid-20s, with an average build, pencil-thin moustache, and a "5 o'clock shadow." This description, suggesting that he may have been Middle Eastern, likely heightened suspicion and fear of terrorism (Vancouver Police Department 26 May 2004, 28 May 2004).

In early June, the incident became the subject of a public dispute between Vancouver's Chief Medical Health Officer, John Blatherwick, who maintained that the cause was "mass anxiety," and both police and ambulance agencies, who disagreed. At a police press conference, a spokeswoman rejected Blatherwick's position, noting that "he is not involved in the investigation and he is misinformed. The investigation remains active, as toxicology results are still not complete" (Vancouver Police Department 11 June 2004).

On June 25, Vancouver Police made a startling announcement: When tests of the bus by the Royal Canadian Mounted Police were unrevealing, they hired a private firm to conduct further tests, which identified methyl chloride as the chemical in the "attack." Reporters were told that "in high concentrations [methyl chloride] is capable of killing someone. While it is impossible to say how much of the gas the victims were exposed to or how it came to be delivered into the air on the bus, it would have taken a fairly high concentration to force the gas into some of the materials on the bus, such as seat fabric and the air filters" (Vancouver Police Department 25 June 2004).

One of the lead police investigators publicly defended his department's interpretation of the methyl chloride findings, but on

emotional, not scientific grounds, implying that elite medical professionals are immune from mass hysteria: "You're talking about two very senior ambulance attendants and they're not going to have psychosomatic symptoms, they've seen everything" (Crawford 2004). Police then urged those who felt sick that day to go back to their doctors for more tests ("Dangerous" 2004).

On the surface, it no longer seemed to be a question of "if" but "who?" Yet, there were many unanswered questions: Could the methyl chloride have come from the air and built up in small quantities over time? Why hadn't police at the briefing acknowledged this possibility and instead announced with certainty that a chemical attack took place? Why hadn't the other bus filters been checked as a control? During the first three media briefings, not a single reference was made to anyone on the bus smelling an odour during the incident. Yet during the June 25 briefing when methyl chloride was "identified," police said that after the suspect disembarked, an odour was detected by some passengers. Most puzzling were the claims about methyl chloride. Traces of methyl chloride are common in the environment. The U.S. Environmental Protection Agency states that it is "formed in the oceans by natural processes" and "has been detected at low levels in air all over the world." It is also found in cigarette smoke, burning wood, plastics, and coal—even aerosol propellants and chlorinated swimming pools (van den Hemel 2004).

An absence of objective findings

Following the press briefing, Dr. Blatherwick reaffirmed his diagnosis of mass psychogenic illness, noting that some of the symptoms were inconsistent with methyl chloride as the cause, even if the chemical had been present in higher amounts; rather, the symptoms of the sick people were consistent with anxiety, or psychogenic illness. Indeed, a review of the test results revealed that the amount of methyl chloride found was minute: 27 parts per million. Further, there was no request to test other bus filters that could have served as a control to gauge these findings (van den Hemel 2004).

Dr. Blatherwick's mass hysteria position infuriated the paramedics. For example, a representative of the Ambulance Paramedics of British Columbia defended the terror attack scenario, suggesting that experienced medical professionals will not succumb to mass hysteria. He noted that the "two paramedics have close to 50 years of combined

experience, the majority of that experience in one of the busiest ambulance stations in Canada." He also said: "I know these paramedics personally and they exemplify compassion, commitment, competence, caring, and professionalism" (Myers 2004). Unfortunately, these qualities do not inoculate anyone from anxiety. Modern professional soldiers are trained to be robust under pressure, cope with adversity, and are expected to demonstrate commitment and resilience in circumstances that may be far from ordinary, but cases of Post Traumatic Stress Disorder and other anxiety-related conditions occur even amongst the best-trained personnel. Further, one of the paramedics never boarded the bus that day, but still reported feeling sick. How could this be? Some even theorized that while treating the bus driver, he had later "exhaled the gas" that was breathed in by the paramedic (J. Blatherwick, Personal communication 30 March 2005).

Six weeks after the incident, Dr. Reka Gustafson administered a structured questionnaire to 10 people reporting symptoms in the incident. The most common symptoms were eye irritation and headache (4), pressure behind the eye, thirst, vomiting, belching, and polyuria (3), dizziness, dry mouth, loss of coordination, stomach pain, fear, and anxiety (2), and lightheadedness, shortness of breath, and tremor (1). She notes that while the bus driver and one passenger reported feeling ill, no other passengers did. Further, "first responders who boarded the bus prior to the paramedics and . . . without personal protective equipment did not get ill. Similarly, the bus mechanic who boarded the bus with the paramedic also remained asymptomatic. One symptomatic paramedic boarded the bus, while the other did not. Therefore, symptoms were not limited to those who boarded the bus and most of those who did board the bus were not ill." This epidemiological pattern was inconsistent "with a point source of an inhaled substance causing illness on a bus" (Gustafson 2004). While nausea and vomiting are common with many conditions including anxiety, the more exotic symptoms (excessive belching and polyuria) were experienced only by the three persons quarantined together. "The passenger who did not have an opportunity to discuss her experience with others at the scene did not experience dry mouth, thirst, polyuria, and belching." Gustafson concluded that it was unlikely that all of the symptoms were associated with the same exposure, and that the epidemiology was inconsistent with a toxic chemical exposure (Gustafson 2004). Not a single medical complaint could be confirmed by an objective measure, including physical signs or laboratory tests (Richard Mathias, Personal communication 2005).

The socio-political context

Mass psychogenic illness (MPI) often generates public divisiveness and controversy. Until relatively recently, most cases were confined to school and work settings (Bartholomew and Sirois 1996, 2000). However, with the proliferation of mass communications, there have been numerous incidents in community settings involving pseudo-terror attacks (Bartholomew and Victor 2004). The seeds for this new trend were sown in the chemical warfare campaigns of World War I. In the first half of the twentieth century, media preoccupation with the potential use of chemical or biological weapons triggered regional MPI episodes in the United States, in the form of imaginary terrorists gassing people in their homes (Ladendorf and Bartholomew 2002; Bartholomew and Wessely 1999). Since 1982, several incidents have taken the form of community poisoning scares following rumours of political and ethnic suspicion and unrest (Radovanovic 1990; Hay and Foran 1991; Hafez 1985; Goldsmith 1989; Landrigan and Miller 1983). In December 2005, in the war-ravaged, Soviet-controlled Republic of Chechnya, at least 85 students reported breathing difficulties, headaches, and numbness of the extremities. The episode occurred amid rumors that they may have been exposed to a nerve agent in retaliation for the 2004 Belsan school siege that left over 300 dead. A Chechen government commission concluded that the symptoms were psychogenic, resulting from war stress and rumours ("War" 2005).

The 9-11 attacks and the subsequent global "war on terror" have resulted in a proliferation of terror scares involving mass psychogenic illness (Wessely, Hyams, and Bartholomew 2001). A recent example involved reports of a "mystery illness" among 47 people who were taken to hospital in Australia. The scare forced the closure of the domestic terminal of Melbourne Airport on February 15, 2005, disrupting passenger service across the country and costing one airline an estimated \$3 million. The incident coincided with considerable media speculation about the vulnerability of mass public transport to terror attacks. Despite overwhelming evidence in favor of MPI, the Victorian government continues to describe the incident as a "mystery illness," the cause of which will likely never be known (Bartholomew 2005).

The socio-political climate was integral in the police interpretation of the "toxic bus" findings, as evidenced in their announcement

that they had determined with certainty that a toxic agent had been released on the bus, their refusal to cooperate with Vancouver health authorities, and their decision not to accept the negative findings from the Mounted Police laboratory. It is true that scientific findings are not infallible, as there is often a degree of ambiguity in their interpretation. The Brandon Mayfield case is a prime example. The American lawyer was erroneously identified as a suspect in the 11 March 2004 Madrid train bombings, based on points of similarity with a partial fingerprint found at the scene, coupled with his Islamic background. At the time, the U.S. Justice Department claimed that fingerprint evidence had a "zero error rate" (Coghlan and Randerson 2005). In the aftermath of September 11, numerous Muslim terror suspects were held for years without trial, on flimsy "scientific" evidence, only to be released without charge. Clearly, political factors can exacerbate the interpretation of suspected mass hysteria incidents, and result in false positives where evidence is ambiguous and investigators interpret findings consistent with their preconceived notions of guilt.

In the "toxic bus" case, Vancouver police made public claims that were based not on evidence, but the prevailing *zeitgeist*. Their public dispute with the Vancouver Health CEO led to an emotional response and a refusal to cooperate with local health authorities. Despite Dr. Gustafson's report, and a thorough discrediting of the methyl chloride hypothesis by Dr. Blatherwick, Vancouver police have yet to officially acknowledge the likelihood of MPI. As of February 2007, the case is considered active and they are still searching for the mysterious man who left the bus. The police briefings on the department's Web site continue to claim that the incident was a terrorist attack using a chemical weapon. Alternative hypotheses do not appear.

History teaches us that fear clouds judgment, often resulting in decisions that are based more on emotions than reality during times of perceived crisis. History is replete with North American moral panics: the Salem witch-hunts of 1692; the anti-Catholic scare of 1830–1860; the White Slavery Panic of 1907–1917; the anti-German panic of 1914–1917; the First Red Scare (1918–1921); the internment of citizens of Japanese heritage (1942–1945); McCarthyism (1946–1955); Satanic cult fears (1982–1992); and, most recently, the international Islamic scare (2001 to present), the latter being the prism through which the "toxic bus" case should be viewed.

Vancouver authorities were not experts in toxicological assessment, instead relying on specialists from the Royal Canadian Mounted Police. Vancouver police refused to accept the negative findings of the Mounties, instead opting for a second set of tests by a local firm. At the very least, when the spectacular new claims of a chemical weapons attack on the bus were made by the local firm, these results should have been assessed by federal law enforcement specialists. If such an institutional protocol had been followed, federal experts would have quickly noted the inconsistencies in the evidence, such as the widespread prevalence of methyl chloride in the environment.

Psychological and sociological perspectives

There are many competing theories as to the nature of mass hysteria, largely drawn from either social or psychological perspectives. The psychological literature draws heavily on the vast research on risk and risk perception. It is now well established that the public views certain exposures as more risky than others, and that this popular, lay perception of risk is often at variance with expert and/or toxicological assessments. Hence, exposure to agents that are novel, human-made, invisible, persisting, and associated with threats to future generations of unborn children are viewed with more fear and dread than other risks (Slovic 1999). Floods have killed far more people than nuclear power plants, but it is the latter that generate popular concern, at least in Western societies. Agents that might be involved in terrorism almost invariably score about as high as you can get on lay measures of risk and fear. It is for this reason that such fears are more likely to generate mass hysteria episodes, as in the case described.

In a Canadian context, Lemyre, Turner and Krewski (in press) used a random representative sample of 1,500 Canadians to explore perceptions of terrorism. They showed that, as elsewhere, Canadians view terrorism as having great catastrophic potential and personal impact, most particularly involving so-called unconventional agents (chemical or nuclear) as opposed to conventional explosives. On the other hand, most respondents reported that the actual likelihood of terrorism in Canada was low. As is now well established, women are more likely to become involved in mass hysteria episodes than men. Again, risk assessment appears to play a part. Lerner and Gonzalez et al. (2003) showed in an experimental setting how

women are more likely to react with either fear or pessimism to terrorism-related risks, while males were more likely to show anger. It is fear, not anger, that triggers mass hysteria episodes.

The psychological literature also draws on the research on anxiety and/or panic. Fear is an emotion, and like all emotional states, it is accompanied by certain physiological changes. Fear is associated with a variety of symptoms, such as breathlessness, palpitations, tremor, and the like. However, these same symptoms can also be confused with, or mistaken for, signs or symptoms of actual exposure to the feared agent. Such misperceptions can lead to an almost immediate increase in fear, and hence a worsening of physical distress, which provides further confirmation of the truth of the misperception that a person is being exposed not to anxiety, but an unknown or invisible "toxic agent."

The sociological literature provides much material on the transmission of such fears, the final part of an episode of mass hysteria. Episodes of mass hysteria are more likely to be contagious if some of the earliest cases of those affected are seen as being of high status within the group. Seeing a bus driver or member of the emergency services succumb to unexplained illness is a more potent trigger of an episode than when the first person affected is either a stranger and/or a person of low social status. Alternative sources of information are rapidly overwhelmed in the anxiety of the situation, and a new "emergent norm" of behaviour emerges.

The emergent-norm perspective rejects the notion that victims become "hysterical" per se as a cathartic response to accumulating stress, but rather focuses on the influence of sociocultural norms and unique contextual circumstances in structuring episodes (Lee and Ackerman 1980; Kerckhoff 1982). Instead of emphasizing the role of stress per se, or pathological group processes, focus is on the newly emerging definition of the situation from the viewpoint of those affected, creating what William Isaac Thomas (1923) first described as a self-fulfilling prophecy. This approach examines how victims, observers, and the community at large explain the episode, and analyses the consequences of the interpretations. Whether or not someone is affected is determined by such factors as physical and visual proximity, social and cultural beliefs, education level, and precipitating events. The actions of authority figures such as emergency personnel can defuse or validate situations either through calm reassurance or expressions of outward anxiety.

Perception of risk can be either reduced or amplified by many factors, including the political context. We live in a risk society, and even the word itself is increasing in epidemic proportions in both the media and scientific literature (Skolbekken 1995). Beck's "Risk Society" is one of the most influential contemporary social texts (Beck 1992). Risk is part of politics, and as such can be manipulated (Slovic 1999). Whether intentionally or not, the current focus on the risk of terrorism has increased contemporary fears, even though these are statistically unlikely events. The "toxic bus" and other similar episodes can be seen as a side effect of this risk amplification.

Conclusions

The "toxic bus" episode is just one of several dozen of cases of mass psychogenic illness in the wake of 9–11 involving a perceived chemical or biological attack, and resulted in a significant depletion of law enforcement personnel and resources, and an increase in public anxiety both regionally and nationally. It is important for law enforcement to maintain close communication with health authorities under whose jurisdiction the case falls, and to trust the scientific evidence and not compound the situation with implausible theories that are not supported by scientific investigations.

Given the fear and uncertainty that typifies mass psychogenic illness, it is imperative to focus on the facts of any given case and limit speculation—especially when that speculation reflects popular stereotypes and beliefs. Urban myths, legends, and rumours concerning the threat of terrorism are becoming part of modern life. The sinister person on bus #98 has echoes of the person of Middle Eastern extraction who has appeared around the globe since September 2001, warning an innocent stranger who has just rendered him assistance to avoid a particular building or city centre on the following weekend. We can expect more of these stories. Such accounts have become so common that folklorists refer to it as the "helpful terrorist" motif.

Rumours of chemical and/or biological terrorism are particularly potent triggers of public anxiety because of the congruence between chemical/biological agents and current environmental concerns, be it pesticides or "Bird Flu." We already know that the number and range of current health concerns, labelled by psychologist Keith Petrie as "modern worries," predict symptomatic responses after

genuine pesticide exposure (Petrie and Wessely 2002; Petrie et al. 2005). Our health concerns thus act as what the military call a “force multiplier” when confronted with confirmed toxic exposures, and there is every reason to assume that this effect will be seen whether or not the exposure is confirmed or not (David and Wessely 1995; Vasterman and Dirkzwager 2005).

Claims that we now live in an age more accepting of psychological distress, and less stigmatizing of psychological disorder, may be premature. In particular, occupations well-known for their masculine culture, namely the military and the emergency services, may be especially sensitive to any suggestion of anything other than a strictly biomedical origin to symptoms or ill health (Yzermans and Gersons 2002). These are also precisely the occupations most likely to come into contact with chemical or biological agents.

The potential long-term consequences of this incident are unknown, but the experience of other well-publicized incidents where the cause of ill health is contested is not reassuring, particularly when the controversy centers on a physical versus psychological distinction (Hyams, Murphy, and Wessely 2002; Engel, Adkins and Cowan 2002). Given the continued fear of terror attacks, and the inherent controversy that surrounds the diagnosis of mass psychogenic illness, similar incidents and controversies are inevitable. In investigating future cases, law enforcement and emergency responders should accept the scientific findings and avoid becoming emotionally invested in the outcome of environmental tests. Keeping the case open and refusing to accept the obvious diagnosis of MPI only fosters public confusion and anxiety. We offer the following checklist of practical steps for law enforcement and other emergency service personnel to adopt in dealing with situations such as the “toxic bus” incident.

1. Stay calm, offer reassurance.
2. Do not deviate from prearranged emergency response plans.
3. When mass hysteria is suspected, avoid using the term, instead substituting more neutral phrases such as “anxiety reaction” and “mass psychogenic illness,” which are less likely to trigger an emotional backlash by victims. A majority of mass hysteria diagnoses are met with scepticism and anger, as the term “hysteria” has a long history of being used to stigmatise individuals and groups, and evokes negative emotional connotations.

4. Never tell patients that it's "all in their heads," as the symptoms they are experiencing are real.
5. Avoid public disputes while contentious cases are under investigation, and consult federal experts who are in a position to render a more objective assessment and have available to them more specialized resources. Conversely, authorities should avoid outsourcing environmental tests to private companies that may not be viewed as acting independent of the police, and whose employees may feel pressure to draw conclusions based on publicly stated police positions.
6. During the initial response, where practical, emergency personnel should separate patients from nonpatients, keeping them from visual and audible contact. The same protocol should hold true for patients in order to avoid the inadvertent collusion with symptoms.
7. Do not prompt patients as to what you think their symptoms should be, based on the suspected agent used; rather, let the patients disclose their symptoms without guiding them.
8. Resist the temptation of debriefing victims using experts in trauma counselling as part of a management protocol. There is now little doubt that immediate trauma counselling is at best ineffective and at worst counter-productive (Wessely 2003; 2004).
9. Do not speak to the media individually, but through a limited number of spokespersons who provide a uniform message, reducing the potential of public confusion, concern, rumours, and misinformation.
10. Become familiar with the characteristic features of MPI. When most or all of these features are present, psychogenic illness should be considered as a possible diagnosis. These are: (1) symptoms with no plausible organic basis; (2) symptoms that are transient and benign; (3) symptoms with rapid onset and recovery; (4) occurrence in a segregated group; (5) the presence of extraordinary anxiety; (6) symptoms spread via sight or sound, (7) a spread occurring down the age-scale, beginning in older or higher status persons; and (8) a preponderance of female victims.

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