CORRESPONDENCE

Inhalation of ammonium nitrate fuel oil explosive (ANFO)

EDITOR,—Ammonium nitrate fuel oil (ANFO) is a granular solid used as a blasting explosive in metalliferous mining. Compressed air is used to propel ANFO from a keg by way of flexible hose to drilling holes within rock.

I recently treated a miner who accidentally inhaled ANFO when the hose he was using to charge a face slipped out of a drill hole. He described the plume as consisting primarily of vapour rather than dust as the keg was almost empty at the time. He was not wearing a respirator. He experienced irritation of the eyes and throat, headache, nausea, chest tightness, cough, shortness of breath, and wheezing. An occupational health nurse who responded to the emergency call out recorded a respiratory rate of 20 and a blood pressure of 135/100. She administered oxygen and nebulised salbutamol, and then irrigated his eyes. These measures resulted in symptom relief. The miner then returned to see me 15 hours later with a recurrence of his respiratory symptoms. He was 40 years old and a current smoker, with no history of asthma or atopy. Examination showed widespread rhonchi but no cyanosis. His respiratory symptoms and rhonchi were relieved by nebulised salbutamol on three further occasions before complete resolution 46 hours after exposure. The peak expiratory flow rate varied between 610 and 690 l/min during this period. Spirometry results three weeks after the exposure were similar to those obtained during health surveillance four years earlier.

The safety data sheet for ANFO indicates a composition of 94% ammonium nitrate and 6% hydrocarbon solvent fuel oil. It is possible that the irritant features found in this case were due to either or both of these components. Because the inhalation occurred before any explosions took place, there would have been no concomitant exposure to nitrogen dioxide. The absence of cyanosis and hypotension suggests there was no significant systemic nitrate exposure. The absence of cyanosis and hypotension suggests there was no concomitant exposure to nitrogen dioxide. Because the inhalation occurred before any explosions took place, there would have been no concomitant exposure to nitrogen dioxide. Due to either or both of these components. Because the inhalation occurred before any explosions took place, there would have been no concomitant exposure to nitrogen dioxide.

The persistent symptoms of lassitude, fatigue, and headache are of note in view of the debate around conditions called “microwave sickness” (or neurasthenic syndrome) in east European publications and regarded with scepticism by some western authorities. The symptoms include headaches, sleep disturbances, weakness, impotence, chest pains, and poorly defined feelings of illness. There may also be changes in blood pressure and pulse rate. Schilling’s detailed report gives substance to the existence of microwave sickness and shows that it should not be dismissed as depression or hypochondriasis or post-traumatic stress disorder. The onset of diarrohia in two of the men is suggested by Schilling to be due to heating of the bowel.


Author’s reply—I welcome the interest and comments from Hocking regarding my recent case report. Man A and man B, the two who were likely to have had the greatest exposure on the basis of their symptoms and signs and their position in relation to the antenna, had full ophthalmological examinations within a few months of the incident and no abnormalities were reported. As a result of Hocking’s enquiries I am arranging for them to have follow up examinations in the near future.

Hocking suggests that the abdomen was disciplined by “the skip”. The skip was about 1 m deep and the edge of it was about at waist level. The three men were winched up to the live antenna panel and as they were winched up the skip tipped as it caught on the structure supporting the antenna panel so that it reached an angle of perhaps greater than 30°. Two men had to lean forward to free the skip from the transmission mast. As a result of this the abdomen above the waist and thus a substantial proportion of the large bowel is likely to have been exposed to radiofrequency radiation. I am, however, most interested in the suggestion that the diarrhoea may have been the result of stimulation of the autonomic nervous system passing through the neck.

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NOTICES


Topics:
- A global overview of small scale enterprises (SSE) in employment and national economies
- The present situation in occupational health and safety in SSEs (situation analysis)
- Regulation, enforcement, and inspection issues
- Occupational health and safety services and other services
- Strategies and approaches for the prevention and solving of occupational health and safety problems in SSEs
- Interventions and case reports on actions at the workplace level
- Competence and skills of the personnel in SSEs
- Economic impact on occupational health and safety in SSEs
- Future challenges.

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Topics:
- Good occupational health practice, focusing on workplace evaluation and systems evaluation
- Evaluation
- Future perspectives
- Other topics related to good occupational health practice and occupational health service evaluation

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