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 drill 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 principally 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 wheeze. 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 irritated 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 showed a peak expiratory flow rate of 610 and 690 l/min during this period. The peak expiratory flow rate varied between 610 and 690 l/min during this period. The peak expiratory flow rate varied between 610 and 690 l/min during this period.

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 toxicity, although methaemoglobinemia was not measured directly. Chronic respiratory sequelae such as bronchiolitis obliterans were not found. I am not aware of a previous report of ANFO inhalation.

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Effects of acute exposure to ultrahigh radiofrequency radiation on three antenna engineers

EDITOR,—Schilling’ reports the health problems of three men overexposed to ultrahigh frequency (UHF) TV radiation (785 MHz, >20 mW/cm² for 1–3 minutes). Their symptoms included immediate sensations of heating and pain, and later erythema lasting a few days. Two had diarrhoea for one to three days. Subsequently all three had headaches, dysaesthesia, lassitude, and loss of stamina which slowly improved over some three years. Detailed reports of overexposure are helpful in understanding the effects of radiofrequency radiation on humans so I would like to make the following observations.

There is no comment about eye examinations yet induction of (posterior subcapsular) cataract has been well documented in animals exposed to UHF or microwave frequencies usually in excess of 100 mW/cm². Any findings, even negative ones, would be of interest given the anatomical differences between animal and human eyes and hence their likely differences in interaction with these wave-lengths.

The persistent symptoms of lassitude, fatigue, and headache are of note in view of the debate about conditions called “microwave sickness” (or neuroaesthetic 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 diarrhoea in two of the men is suggested by Schilling to be due to heating of the bowel.

However, the antenna was largely shielded by the skip so I suggest that it was due to stimulation of the autonomic nervous system passing through the neck, which is similar to the mechanism postulated for other visceral effects—such as on the heart.

It is interesting that the men had persistent headaches and dysaesthesias after exposure to their upper body. I have reported a series of people who developed a burning sensation on the side of the head when using a mobile phone (900 MHz) suggesting that lower level exposures may have similar effects on some people. It is postulated that the A delta (pain) and C (sympathetic) nerves produce these diverse effects and are susceptible to certain combinations of wavelengths and modulations.

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Topics:
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- Occupational health and safety services and other services
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- 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:
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