TH Connor et al. CA Cancer J Clin (2006) Vol.56 p 354–365
Preventing Occupational Exposures to Antineoplastic Drugs in Health Care Settings

The report confirms the concerns about unintentional exposure to antineoplastic drugs and highlights several guidance notes that are generally available on this subject. Guidance began to appear in 1981. Medical consequences of exposure include the possibility of those with long latency periods e.g. heart disease. Occupational exposures would tend to be more complex than those of patients and, last much longer.

Anti cancer drugs are usually non-selective i.e. they can have an effect on a broad spectrum of tissues, not just cancerous ones. Known effects in treated patients include:

hepatic and renal toxicity,
cardiotoxicity,
hematopoietic toxicity,
pulmonary toxicity,
immunotoxicity,
ototoxicity (hearing),
dermal toxicity, and
injury to tissues with a rapid turnover rate (e.g. blood cells).

The most common secondary malignancies attributed to treatment are leukaemia and bladder cancer reported after a latency period of several years.

Reproductive and developmental effects similar to those observed in patients have been reported in health care workers who are exposed to antineoplastic drugs at considerably lower doses than those administered to patients. All the above effects could be seen in unintentional exposures.

Unintended exposure may result from employment in/as; shipping and receiving anti cancer drugs, pharmacies, nursing, physicians, operating rooms, environmental services, research laboratories and veterinary practices. Personnel will have had a variety of degrees of training and in some cases no training at all in the need for and means of protection.

Studies from several countries have shown contamination of surfaces of biological safety cabinets, countertops, floors, equipment, and most surfaces in areas where patients are treated. Standard occupational hygiene methods can be used to detect routes of contamination.

The presence of drugs and metabolites can be determined in urine analysis.

Guidance on safe handling of drugs and patients has been available since 1981: Society of Hospital Pharmacists of Australia's Speciality Practice Committee on Parenteral Services. Guidelines for safe handling of cytotoxic drugs in pharmacy departments and hospital wards. *Hosp Pharm* (1981) Vol.16 p 17–20. ['Parenteral' means administration by non oral method; usually by injection.]

Comment
Cancer patients will be cared for and handled in a number of settings. Many of these are staffed by non-specialists e.g. in care homes or by domestic support. Although the above set of outcomes is not specific to antineoplastic drugs it is possible that the lack of any records of appropriate training and hygiene measures could encourage speculation as to cause. Drugs and patients should be COSHH assessed.

Employees could be exposed to very wide variety of drugs at low levels for long periods. Identification of a specific alleged cause of disease may be difficult.

Highest risks would be in receipt and storage, drug preparation, drug administration, transportation and waste handling (including urine, blood, sweat, faeces and vomit).

Medical surveillance would help identify early signs of exposure and health problems.

For general guidance on drug exposure management see:

- Occupational Safety and Health Administration. OSHA Technical Manual, TED 1–0.15A, Section VI, Chapter 2, January 20, 1999. Available at: http://www.osha.gov/dts/osta/otm/otm_vi/otm_vi_2.html#2
- HSE Information Sheet MISC615 " Safe Handling of Cytotoxic Drugs" (2003)