

# Contaminated casualties: are we prepared to receive them?

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## SUMMARY

The NHS's reception of casualties contaminated by radiation is reviewed. The findings suggest that training, facilities and personal protection for hospital staff are inadequate.

**Key words:** contamination, decontamination, protection, radioactive

## INTRODUCTION

It is a requirement of institutions where there exists a potential for accidents involving radioactive contamination to make contingency plans, including arrangements for hospital treatment of casualties and for the protection of their employees and the public.

In order to deal with incidents for which only limited contingency planning by operators is practicable, the National Arrangements for Incidents involving Radioactivity (NAIR) were devised in 1964 and were last revised in 1987 by which time they had been implemented on over 300 occasions. NAIR are designed to provide radiological advice and assistance to the police when no alternative source of assistance is readily available, when other plans have failed to operate properly or where delays are experienced in effecting them.<sup>1</sup> Such occasions include damage to containers in transit and accidents to vehicles conveying radioactive substances in public places. Regional Health Authorities have the responsibility to draw up plans with District Health Authorities for designating hospitals for decontamination and treatment of contaminated casualties<sup>2</sup> for inclusion in the NAIR scheme. If, however, it is decided at the scene that the casualty requires urgent hospital treatment for any injuries, he should be taken to the nearest accident and emergency (A&E) department.<sup>3</sup> The Department of Health states that it is essential that the readiness of staff to perform the role of treatment and decontamination

is maintained by adequate training and exercising.<sup>2</sup> The authors conducted a survey to determine whether this is the case.

## METHODS

The survey took the form of a questionnaire addressed to the named head of department of the 187 A&E departments in England that treat over 30 000 patients per year.

The questionnaire asked whether or not each department was designated to receive contaminated casualties and if it had done so. Other topics covered included the monitoring equipment available, staff protection equipment and facilities for decontamination which also had relevance to the management of other noxious but non-radioactive contamination. The ability of the department to cope with multiple casualties and the level of training for staff were also covered.

## RESULTS

Of the 187 A&E departments surveyed, 118 (63%) replied. Of these hospitals, 42% were designated to receive contaminated casualties. As can be seen from the results tables, there was a marked difference in both the availability of equipment and the level of training between the designated and non-designated centres.

Approximately three times the percentage of designated hospitals said they had access to medical

**Table 1.** Availability of monitoring equipment

	Designated hospitals(%)	Non-designated hospitals (%)
Medical physics	61	19
Monitors	25	7
None Known	14	74

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	Designated hospitals (%)	Non-designated hospitals (%)
(1) Plastic sheeting or stated equivalent	78	65
(2) Hooded overalls or stated equivalent	66	26
(3) Boots/overshoes	80	65
Combination of (2) and (3)	60	25
Combination of (1), (2) and (3)	54	22

**Table 2.** Equipment to reduce spread of contamination

**Table 3.** Training facilities available to staff

	Designated hospitals (%)	Non-designated hospitals (%)
Printed Material	82	47
Talks	48	19
Video	26	12
Exercises	42	7
Printed Only	36	25
None	2	41

**Table 4.** Facilities to dispose of shower water

	Designated hospitals (%)	Non-designated hospitals (%)
Main drain or none	76	94
Containment	16	6
Separate Drain	8	0

physics or to monitoring equipment when compared with non-designated hospitals. However, even in the designated hospitals 39% of staff were unaware of access to medical physics and 75% of hospitals did not have monitoring equipment available to them (Table 1).

Table 2 shows that 46% of designated hospitals and 78% of non-designated hospitals lacked basic items of equipment to minimize the spread of contamination and protect staff. Training facilities (Table 3) were absent in 41% of non-designated hospitals with exercises only occurring in 7% of

these hospitals. Training facilities appear to be much better in the designated hospitals, 42% of which undertook exercises.

The vast majority of hospitals disposed of contaminated shower water down the main drain with only 6% of the non-designated hospitals and 16% of the designated hospitals using a containment system, although 8% of the designated hospitals did have a separate drain (Table 4). Although the majority (76%) of designated hospitals use a specific room for decontamination only 35% of the non-designated hospitals had this facility (Table 5).

Of those department surveyed 44% of the designated hospitals and 18% of the non-designated hospital felt that they could cope with multiple contaminated casualties.

## DISCUSSION

Although accidents resulting in casualties contaminated by radioactivity are rare, 18% of designated hospitals in this survey have been required to treat them. Accidents during transport will continue to occur sporadically so that any A&E department may be called on to treat the injured. The UK Atomic Energy Authority recently flew 500kg of plutonium fuel rods to Scotland in containers designed to withstand a drop into an unyielding surface from a height of 9m — equivalent to a 30 mile an hour impact — this meets current regulations and is not regarded as unsafe practice.

Hospitals are now required to comply with the Health And Safety At Work Regulations and must

	Designated hospitals (%)	Non-designated hospitals (%)
Designated room	76	35
Decontamination compounds	42	25
Specialist trolleys	16	7
Shower	74	63

**Table 5.** Facilities for patient decontamination

therefore ensure that suitable personal protective equipment, including clothing, is provided to employees who may be exposed to a risk to their health whilst at work. The employee must also be given adequate information, instruction and training to enable him to know the protection provided by the equipment and its uses and limitations.<sup>4</sup> We found that the majority of designated hospitals were aware of access to monitoring equipment but the reverse was true in the other hospitals. (Table 1). The results show that nearly half of the designated hospitals and approximately three quarters of the non-designated hospitals lacked basic items to minimize the spread of contamination and to protect staff. It is apparent that training facilities and exercises are lacking in a large proportion of both types of hospital but particularly in the non-designated ones. However, even in the designated hospitals the training facilities appear to fall far short of those recommended.

Many of the 76% of designated hospitals (Table 4) who stated that radioactively contaminated water could be put down the main drain had been misinformed as this is illegal with  $\alpha$ -emitting radioisotopes, which may be involved in these contamination incidents. It is obviously difficult to generate

and maintain interest in safe practice for unlikely occurrences, particularly when staff change frequently, but Department of Health guidance states that 'the readiness of staff to perform this role is maintained by adequate training and exercising'.<sup>2</sup> It is essential that the hospitals that the Regions designate 'can be equipped and staffed to perform these roles'.<sup>2</sup> The authors do not believe that this has been achieved in most A&E departments and yet much of the application of safer handling, including waste containment, could be used in the more likely event of treating the injured patient who is chemically contaminated.

## REFERENCES

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