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Fuel tanker fire disaster — South Sudan experience

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ABSTRACT

In the last 15 years 26 incidents involving transport of fuel have been recorded from 17 countries throughout the world. More than 1,300 people have died, and at least 791 have received burn injuries. One such devastating event was attended by the senior author in South Sudan.

These incidents have been more common in third world countries and have proved a major problem for the local health services.

This paper summarises the experience in South Sudan in addition to principle issues and possible causative factors then suggests relevant preventative measures to reduce similar incidents in the future.

1. Introduction

This paper is a review of the frequency, causes and possible prevention of petrol tanker disasters. It arose from a disaster in South Sudan in 2015, and incorporates all similar disasters that have been reported in the World press or in public record in the last 16 years.

Disasters relating to the spillage or inappropriate ignition of fuel during transport have occurred in developed countries such as the USA, UK and Spain in the past. However it is in the developing countries, where the fuel often originates, that casualty numbers are highest and the greatest impact felt.

2. Method

Following the recent fuel tanker fire disaster in South Sudan in September 2015, 'Save the Children' sent out a team, which included one of the authors, to the location to assess the impact of this incident and to suggest what was needed, both in staff and equipment to assist the local health service to provide good care for the patients involved.

It was clear following the report that such incidents are a serious and under reported phenomenon. This case report from the author forms the basis of this paper. An initial search of the medical literature yielded little solid data on frequency or numbers of casualties in such a situation.

Data on fuel tanker incidents is poorly compiled in the public domain. Specific details of many incidents are held confidentially by some of the companies involved and within government reports. However due to the nature of these incidents media coverage, both local and international, is often substantial.

A review of all related literature has been carried out. Media sources were interrogated via an internet search engine. A

time period of the last sixteen years was chosen to be studied. When available corporate and government sources were used to augment this data.

Fuel tankers are involved in numerous incidents on a daily basis around the globe, not all however result in what can be defined as a 'fuel tanker fire disaster'. Therefore it is necessary to classify such an event. The definition chosen was that any incident involving a fuel tanker fire resulting in the death or injury of five or more individuals. This allowed us to narrow down the most serious incidents involving the greatest fatalities and casualties. It concentrated on road going tankers and did not include pipe line, rail or boat incidents.

Once an incident was identified via media sources or listed in a report, it was examined for specific details about fatalities and casualty numbers. In addition the health service and financial burden was rarely available. Multinational petrochemical companies were contacted but they would not disclose what they considered as confidential data relating to specific incidents.

3. Results

The principle body of results are made up by the personal report of our senior author. This was supplemented by a review of the available literature. Over the past sixteen years a total of twenty four 'fuel tanker fire disasters' were identified. All 'fuel tanker fire disasters' involved fire and explosion following a road traffic incident of some type. Data was not available regarding immediate or delayed ignition of the transported fuel. Mortality numbers [4-10] were most readily available however in nearly half of cases no casualty numbers were recorded. The 'fuel tanker fire disasters' are listed chronologically in Fig. 1.

These incidents involved the transport of petroleum products, other hazardous chemical incidents were excluded.

Location	Date	Mortality	Morbidity
Nigeria	05/11/2000	200	Undisclosed
Uganda	19/07/2001	70	Undisclosed
Jordan	04/06/2003	10	19
India	14/05/2007	30	Undisclosed
China	18/02/2008	16	20
Australia	28/12/2009	3	2
Congo	01/07/2010	220	111
Uganda	25/10/2010	21	Undisclosed
Nigeria	01/12/2010	20	Undisclosed
Pakistan	23/01/2011	31	9
Nigeria	12/07/2012	121	75
China	26/08/2012	36	Undisclosed
Afghanistan	14/09/2012	50	Undisclosed
China	10/10/2012	5	Undisclosed
Afghanistan	19/10/2012	11	36
Saudi Arabia	01/11/2012	22	111
Nigeria	07/01/2014	15	Undisclosed
Pakistan	10/01/2015	62	Undisclosed
South Sudan	17/09/2015	203	160
Egypt	03/04/2016	0	10
South Africa	26/04/2016	2	7
Afghanistan	08/05/2016	73	Undisclosed
Nigeria	26/06/2016	2	10
Saudi Arabia	06/07/2016	22	111
Mozambique	17/11/2016	73	110
Kenya	11/12/2016	39	Undisclosed
Total	26	1357	791 [Disclosed]

Fig. 1 – Incidents of ‘fuel tanker fire disaster’ [2000-2016].

The data collected must be considered indicative as the true casualty numbers must be significantly higher. No data was available for late morbidity or mortality from the burn injuries.

At a number of sites the dead included what were suspected to be the bodies of children although often they were too badly burned to identify.

4. South Sudan September 2016

On the 17th of September 2015 a petrol tanker crashed near Maridi in the South of South Sudan. Various local villagers were securing the fuel when an explosion occurred. A large

number of people were killed or severely burned. The best estimate of the deaths is 203, and that at least 170 people were still in various hospitals a month later.

The 63 patients who had been transferred to Juba teaching hospital and were still alive on the 8th of October were reviewed. These occupied three wards, and were the only patients on these wards.

There were two seriously burned patients who were also ill, and one young patient with a severely burned hand, but otherwise well. In total my estimate was that between 18 and 20 patients would benefit from skin grafting. The vast majority of the burns were being treated exposed with the application of silver sulphadiazine cream. I did try to explain, but briefly, to

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