

## AVON AND SOMERSET LOCAL RESILIENCE FORUM INDIVIDUAL RISK ASSESSMENT (V2.0)

Avon and Somerset Local Resilience Forum Risk Assessment Working Group

**Individual Risk Assessment Lead Agency:**

Avon Fire & Rescue Service

<b>Hazard / threat category:</b>	<b>Sub-category:</b>
Industrial accidents and environmental pollution	Fire or explosion at an onshore fuel pipeline
<b>Hazard and threat description, including scale:</b>	<b>Risk reference no.:</b>
Fire/explosion: a) H5 – up to 1km around the site causing up to 100 fatalities and 500 casualties; b) L9 – incident spread beyond a 500m cordon with more than 5 fatalities and/or 20 hospitalisations, evacuation beyond the cordon; or c) L10 – incident contained within a 500m cordon, up to 5 fatalities and/or 20 hospitalisations, advice to shelter but no evacuation beyond the cordon.	IA/5
<b>Date of revision:</b>	<b>Next review date:</b>
January 2008	January 2009

### 1. Overview of hazard or threat

Pipelines carrying fuels (excluding natural gas pipelines covered by assessment IA/6) run across the Avon and Somerset area. In particular, the Esso Petroleum Co. Ltd. pipeline runs through the area from Fawley (Hampshire) to Avonmouth and there are various pipelines carrying fuels associated with the bulk fuel storage sites subject to the COMAH regulations within the Avon and Somerset area (eg OPA Redcliffe Bay PSD to Avonmouth docks).

Any divergence from the planned operating conditions resulting in a leakage of product may cause fire, explosion, adverse acute/chronic health effects, a threat to public health and environmental damage. Depending on the location of the incident, an incident may also require members of the public to be evacuated or advised to shelter indoors with doors and windows closed.

## 2. Key historical evidence

### GATX Terminals Ltd., Avonmouth, 4 August 1994

A serious fire followed the release and ignition of an atomised fuel vapour from a pipeline flange at a petrol storage depot in the Royal Edward Dock, Avonmouth. One worker died in the incident and subsequent firefighting operations involved 400 firefighters, 22 supervisory officers, 5,500 litres of foam compound and 4,000 tonnes of water in the production of foam, firefighting and cooling. Sixty firefighters were treated at the scene by ambulance crews and a hospital mobile medical team for the effects of skin irritation from various chemicals which contaminated the firefighting water run-off, with 38 subsequently being transported to hospital for further medical checks. The incident required the attendance of the (then) National Rivers Authority to counter possible environmental pollution to the River Severn and lasted 55 hours.

## 3. Likelihood

Hazard	Outcome description	Likelihood
Fire/explosion	Up to 1km around the site causing up to 100 fatalities and 500 casualties	Negligible (1) (National assessment – Health and Safety Executive)
Fire/explosion	Incident spread beyond a 500m cordon with more than 5 fatalities and/or 20 hospitalisations, evacuation beyond the cordon	Unlikely (3)
Fire/explosion	Incident contained within a 500m cordon, up to 5 fatalities and/or 20 hospitalisations, advice to shelter but no evacuation beyond the cordon	Possible (4)

## 4. Impact

### Summary

Hazard	Outcome description	Impact	
		Health:	
Fire/explosion	Up to 1km around the site causing up to 100 fatalities and 500 casualties	Health:	Catastrophic (5)
		Social:	Moderate (3)
		Economic:	Significant (4)
		Environment:	Moderate (3)
		<b>Overall:</b>	<b>Significant (4)</b>
Fire/explosion	Incident spread beyond a 500m cordon with more than 5 fatalities and/or 20 hospitalisations, evacuation beyond the cordon	Health:	Moderate (3)
		Social:	Moderate (3)
		Economic:	Significant (4)
		Environment:	Moderate (3)
		<b>Overall:</b>	<b>Moderate (3)</b>
Fire/explosion	Incident contained within a 500m	Health:	Moderate (3)

**NOT PROTECTIVELY MARKED**

	cordon, up to 5 fatalities and/or 20 hospitalisations, advice to shelter but no evacuation beyond the cordon	Social:	Minor (2)
		Economic:	Moderate (3)
		Environment:	Minor (2)
		<b>Overall:</b>	<b>Minor (2)</b>

Details

**Impacts associated with fire/explosion:**

**Primary:**

Physical harm and injury: burns, smoke inhalation, hearing damage (varying degrees of severity, including death).  
 Damage to property.  
 Disruption to routine oil and fuel supplies.  
 Evacuation and temporary accommodation needs.  
 Environmental pollution from products of combustion or escaping unburned product (eg airborne, aquatic, ground water).  
 Environmental pollution from firefighting operations (eg foam, firefighting water run-off).

**Secondary:**

Loss of economic income.  
 Safety assessments, possible demolition of damaged buildings and structures.  
 Environmental remediation and clean-up.  
 Temporary impact on transport infrastructure (eg road closures or restrictions on use of railways as safety precautions).  
 Need for public information.  
 Reduced availability of fire and rescue resources for routine emergency cover.

**5. Vulnerability and resilience**

Some pipelines have above ground installations (AGIs) but these are usually subject to additional security measures.

Experience from significant pipeline incidents overseas (particularly on the African continent) indicates that the unlawful drainage of product from pipelines is a particular problem. However, in accordance with para. 4.37 of *Emergency Preparedness* this assessment only takes into account non-malicious hazards.

**6. Overall assessment**

<b>Category:</b>	<b>Sub-category:</b>		
Industrial accidents and environmental pollution	Fire or explosion at an onshore fuel pipeline		
<b>Outcome description</b>	<b>Impact</b>	<b>Likelihood</b>	<b>Risk</b>
Up to 1km around the site causing up to 100 fatalities and 500 casualties	Significant (4)	Negligible (1)	<b>MEDIUM</b>

**NOT PROTECTIVELY MARKED**

Incident spread beyond a 500m cordon with more than 5 fatalities and/or 20 hospitalisations, evacuation beyond the cordon	Moderate (3)	Unlikely (3)	<b>HIGH</b>
Incident contained within a 500m cordon, up to 5 fatalities and/or 20 hospitalisations, advice to shelter but no evacuation beyond the cordon	Minor (2)	Possible (4)	<b>MEDIUM</b>

**Controls in place:**

- Compliance with: (a) Control of Major Accident Hazards (COMAH) Regulations 1999; (b) Pipeline Safety Regulations 1996.
- Local Authorities: PSR96 Major Accident Hazard Pipeline (MAHP) plans; off-site COMAH plan; generic emergency plans (eg evacuation and rest centre plans).
- Provision of isolation valves on pipeline networks.
- National Emergency Plan for Fuel (NEP-F).

**Additional risk treatment required:**

- None identified.

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