# INCIDENT ALERT

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| **LOCATION:** | **ASPHALT/COATING PLANT** | **ALERT STATUS:** | **Normal** |
| **ACTIVITY:** | **MANUAL HANDLING AND STORAGE** | **DATE ISSUED:** | **08/07/2014 13:21:07** |
| **SUB ACTIVITY:** | **N/A** | **INCIDENT No:** | **00384** |

## TITLE

**Bitumen spillage after ground based pump off-loading**

## COUNTRY OF ORIGIN

**United Kingdom**

## ACCIDENT / INCIDENT DETAILS

A recent incident resulting in loss of containment of circa 750kg of bitumen provides valuable learning points for hauliers and asphalt mixing plants alike. Whilst there were no injuries incurred in this specific incident, the potential consequences could have been significant.

The chronological sequence of events was as follows:-

• Driver arrives on site and receives information on the storage tank into which to off-load, and information regarding the ullage of the tank. He receives the key to the isolation valve.

• Driver sets up the line, checks the ullage, opens the bitumen tanker valve, starts the pump and begins the off-loading process.

• The delivery is completed without issue and the delivery hose begins to shake indicating the delivery is complete.

• The tanker valve is closed, hose disconnected at the tanker end, coiled up and disconnected at the storage tank end.

• The ground based pump was turned off; the isolation valve to the storage tank was switched to close, and the emergency stop button was pressed. The driver believed this to be “standard practice” as the e-stop was covered in bitumen, as though it had been in regular use.

• Shortly after this, bitumen began to flow back out of the storage tank inlet pipe onto the floor.

• This flow continued until the emergency stop was reset and the actuated valve to the storage tank closed completely.

Investigation concluded the following key points:-

Causes

• The root cause was that the e-stop did not fail safe and there were no backup layers of protection, i.e. a non return valve.

• No effective induction for the driver and the assumption that he knew the system. Combined with this, the driver assumed he knew what he was doing without checking.

• The driver pushing the e-stop button which he did not know would cut the power to this part of the plant. Since it was pressed shortly after the actuated isolation valve began to close, the valve was only half closed when the power was lost. Bitumen therefore siphoned out of the tank

## ACCIDENT / INCIDENT IMAGES

## LEARNING POINTS / ACTIONS TAKEN

• Guidance for the Design and use of Ground Based Pumps has been prepared by the MPA H&S Working Group 7 and the RBA HSE Committee and it is recommended that this is followed for new installations. All existing Ground Based Pump installations should be reviewed against the document. PLEASE CLICK ON ADDITIONAL INFORMATION BELOW TO VIEW PDF OF THE GUIDANCE

• Human Factors failure played a significant part from both the driver’s side and the asphalt plant, due to lack of clarity of instruction and assumptions being made. A Human Failure Analysis in accordance with HSG48 should be carried out on all high risk activities.

• It is critical that the “what if” scenarios are understood through “Hazard and Operability Studies” during the design stage of these systems, and the importance of having second and/or third layers of protection in case something does go wrong.

## LEARNING POINTS / ACTIONS IMAGES