TRANSPORT RISKS 3

THE DANGERS OF TRANSPORT

In view of the nature of vinyl chloride monomer (VCM), it is extremely disturbing that most of the vast quantity of VCM produced worldwide is manufactured far from where it will be eventually polymerised into PVC. It is therefore transported around the world from industrial plant to industrial plant, by road, rail and sea.

The risk of accidents represent present dangers to communities living along these transport routes.

When transported, VCM is compressed and liquified. Any leaks can lead to explosions, since ignition temperatures and critical temperatures are both low (minus 77 and below 160 degrees Celsius, respectively).[1] Ignition may be caused by flames, sparks or hot surfaces.

When VCM escapes, it forms pools of mist which, being heavier than air, creep along the ground. If ignited, they will flash back to the source of leakage.

Large VCM fires are almost impossible to contain. VCM is only slightly soluble in water and reverts to a gaseous state quickly, floating above the water until it forms a gas.

On the water surface, it combines with air to form explosive mixtures. VCM leaked into sewage systems is also highly explosive.

Serious rail transport accidents involving VCM are well-documented; at least 17 took place between 1964 and 1980.[2] In each case the VCM caught fire, and in 11 cases the neighbouring population had to be evacuated.

Three examples:

28 March 1978: A freight train carrying, among other things, tanks containing VCM and butadine was derailed near Lewisville, Arkansas, USA. The tanks exploded and burst into flames.

The fire spread to nearby chemical plant of the J.P. Petroleum Co. where crude oil and petrochemical products were stored. The fire raged out of control and the plant was almost completely destroyed. 1,700 inhabitants of Lewis-ville had to be evacuated.

8 May 1980: Collision at the Nurnberg switchyard in Germany. One manoeuvering unit consisting of 8 Russian tank cars, loaded with 50 tons of VCM each, could not be sufficiently slowed down and the tanks exploded.

26 July 1980: A freight train was derailed near Louisville, Kentucky, USA, and two VCM tank cars erupted in flames. Two thousand people had to be evacuated. All attempts to extinguish the fire failed. Five days later, specialists finally managed to extinguish the blaze.

Minor incidents involving VCM transport are even more frequent. The West German Federal Agency for the Environment lists 42 incidents involving VCM up to 1985 worldwide.

Yet up to 1,000 tonnes of compressed VCM are transported from Solvay's plant in Rheinburg, northern Germany, to another Solvay plant in Ferrara, Italy by rail each week.

The shipments pass through some of Europe's most densely populated residential and industrial areas. And this is just one example, concerning one plant.

Commenting in 1989 on such transport of VCM, a German toxicologist stated:

"...we conclude that the transport of such a highly dangerous chemical by rail or by road cannot be justified, because it poses an extreme

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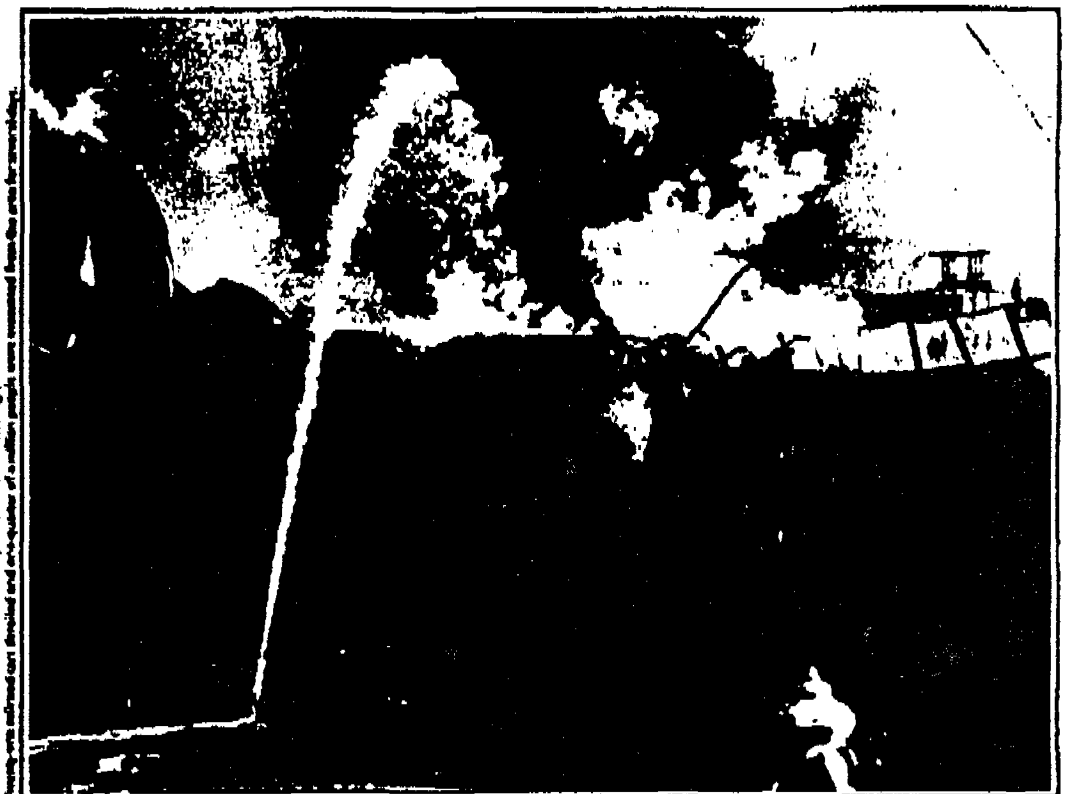
threat to the population in the event of fire or explosion, and can conceivably cause incalculable material damage".[3]

The transport of VCM by ship poses direct threat to the world's oceans. Hydro Polymers Ltd, one of Europe's largest PVC manufacturers, is the UK arm of the Scandinavian petrochemical concern Norsk Hydro (which also has PVC operations in Norway, Sweden and Singapore).

Yugoslavian coast and could not be salvaged. By 1987, it had become apparent that VCM was leaking from the vessel. The ship was salvaged in 1988, but an unknown volume of VCM had already been released into the marine environment.[2]

It is predicted that the Far East and Latin America will remain significant importing regions for the remainder of this decade. Clearly, the



Hydro Polymers produce 125,000 tonnes/year of PVC resin, and 60,000 tonnes/year of PVC compound.[4]

All this volume is produced from VCM which is transported across the North Sea in weekly shipments from Rafnes, Norway, to Teesside in the UK.

With increased production capacity planned, Hydro Polymers will soon be shipping even greater volumes of VCM across one of the world's stormiest seas.

The chemical giant ICI also ships huge quantities of VCM across the North Sea - at least 100,000 tonnes annually from the UK to its plant in Wilhelmshaven in Northern Germany. ICI also ships 80,000 tonnes of VCM annually from Wilhelmshaven to Portugal.[5]

In 1984, the freighter 'Brigitta Montanari', carrying 1300 tonnes of VCM, sank off the

transport of millions of tonnes of this toxic chemical is a cause for major concern.

1 Media Documentation Greenpeace Switzerland October 12 1988: "Background on Sea Transports of Vinyl Chloride."

2 Ahrens, A., Hansling, K.O. "Vom [illegible] zum [illegible]. Die Geschichte des PVC." [illegible] Nr 42, 1988.

3 Communication from Prof. Dr. O. Wassermann, Toxicological Dept. of Kiel University, 28/11/89.

4 Norsk Hydro company brochure.

5 "Verzicht auf PVC & Chlorchemie. Fakten und Argumente fuer den Ausstieg." Die Grünen im Bundestag, Bonn 1988.

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