



Date 19 October 1977

INTEROFFICE
MEMORANDUM

Subject Vinyl Chloride Safety Association Meeting

October 6, 1977

To T. L. Carey

(Location, Organization, or Department)

From J. T. Barr

(Location, Organization, or Department)

cc: R. Burnham
D. Francke
R. Gilbert
C. A. Heiberger
R. McGinnis
J. Novak
E. Primeau
F. Riddle
J. Russell
R. Schenck
W. Silowka
W. M. Smith
W. Stuben
L. Tepper
D. Ward

The Vinyl Chloride Safety Association held its annual meeting at Valley Forge, Penna., on October 6 - 7, 1977. A total of 83 persons from 32 companies attended, with 13 of the companies being outside the U.S. This was a record attendance in both categories. Attendees from Air Products were the writer and Dale Francke and Jim Russell.

The officers elected for next year were:

Chairman,	H. Waltemate, Goodrich
Vice-Chairman,	H. Lloyd, Georgia Pacific
Secretary,	H. Olsen, Ethyl
Program	J. Flores, Gt. American
Treasurer	R. Hager, Stauffer

In a general discussion of the aims of the Association it was concluded that no major changes were needed. A copy of the by-laws will be circulated to all members for review.

A copy of the agenda is attached, and a brief review of each subject is given below.

PHYSIOLOGICAL EFFECTS

Dr. R. W. McBurney of Diamond-Shamrock discussed the hazards of vinyl chloride. He described it as a relatively non-toxic narcotic which could cause death from arrhythmia in high doses. It is detoxified in the liver by sulfhydryl-bearing enzymes, and the chief target of the metabolites is the lining of the small blood vessels. This leads to two types of disease. Scleroderma is a reversible result of small vessel

(320)

AP00050551

plugging which is seen more in Europe than in the U.S. In a few especially susceptible people it can cause sensitivity to cold (Reynaulds Phenomena) and if the bone tufts are starved, resorption of the bone, resulting in finger clubbing, called acroosteolysis. It can also cause liver fibrosis, or cirrhosis, and enlargement of the spleen from high portal vein pressure. The above symptoms are relatively rare.

Even rarer is angiosarcoma, a cancer of the liver blood vessel lining. The body seems to detoxify low doses safely, but at higher dosages the primary metabolic pathway is swamped and attack on the body occurs from secondary metabolites. This disease is very rare, about 25 cases per year in the U. S. It is sometimes seen in infants, and can also be caused by arsenic and thorium. Chemotherapy is not effective, and it usually occurs at multiple sites in the liver and is not operable. It would be reasonable to expect sarcomas at other sites as well as the liver, if this mechanism is correct.

He expressed the opinion that the threshold for rats to develop cancer was about 35 ppm, and felt that anything below 15 ppm was safe for humans, thus most of the effort spent on OSHA and EPA compliance is a waste. About one person in 3400 develops cancer at high exposures, and he postulated a genetic predisposition to the disease.

He further said that no medical screening program can be really effective, because there are no early warning signs. The normal population has 15-20% "abnormal" blood tests. Diamond-Shamrock returns men to VC exposure with 2 abnormal results in the SMA - 12 blood test if their liver scan is normal. They do not perform a biopsy on employees, but refer them to their own physicians.

Medical Surveillance

H. Lloyd, of Georgia-Pacific led a discussion of medical surveillance practices. All companies have similar preplacement medical exams, and generally use the same tests as in their annual re-exam. Many report problems with alcohol consumption before the tests.

Treatment after an "emergency" was not consistent between companies. Some give blood tests, although they are not sure why. Even the definition of an emergency was not uniform, although most held that exposure to greater than 100 ppm without breathing protection as a definition.

The employment of women of child-bearing capacity is still an unsettled topic. About two-thirds do not permit them in exposure areas.

Most companies make the annual re-exam a condition of employment, but where this rule has been challenged by an employee, the company has lost. Many have consolidated the VC exam and their routine physicals, especially where the company examines all employees. The average cost per employee was about \$100. Some have eliminated one of the x-ray tests for employees with two exams/yr.

AP00050552

Chromosome Studies

Per Ranges, of Norsk Hydro, gave a report on a recheck of their chromosome breakage study of 3 years ago. In the original study, they found that heavily exposed workers had a breakage count of about 4%, compared to 1.8% for controls. They repeated the study this year, three years after heavy exposure ceased, and found that carefully matched controls had 1.2% breakage and workers had 1.6%. They assume from this that the damage is reversible.

He was asked to transmit this to SPI and MCA as soon as the report is formalized.

OSHA ENFORCEMENT

H. Waltemate of Goodrich reported on four OSHA inspections at their plants which all occurred in the first week of August of this year.

The Calvert City plant had a general KOSHA inspection and received 15 citations, all non-serious, with 2 penalties totalling \$100.

The Long Beach plant was inspected by CALOSHA, with sampling being done for VC, benzene, lead, noise, dust and ammonia. This was prompted by the "Gregario Amendment", a new law on carcinogens passed this summer. They expect to receive citations for a respirator on which they had changed the connector and thus nullified the NIOSH certification, an employee with a beard (whom they claimed could not get a good respirator fit), drinking coffee in a regulated area, and an improper dust mask in the compound area, where dust levels were high.

The Louisville plant had a 12 day inspection, prompted by an employee complaint. They expect no citations there. The problem was that their employees do not believe the published results of the monitoring program, and want an independent check on exposures. Hooker said they have the same problems, but most companies reported otherwise.

Their Pedricktown plant reported two massive releases in three weeks just before the inspection. A four day visit included sampling for VC, cadmium, carbon black, and noise. They expect citations for dust and an improper respirator in the compound area.

Waltemate offered to act as a clearing house for citations and policy letters from OSHA. Those having information of general interest can send those items to him, and he will circulate them to the group.

Pantasote was cited and fined for storage of tankcar outside their regulated area. They now have the City Police patrol a section of track for them.

AP00050553

Tenneco has had 19 inspections in two years, 13 of which included monitoring tests. They have received two citations.

Borden was cited when OSHA sampling showed exposures of men in masks to 1.5 and 3 ppm. They were also refused the OSHA data, and were told that the decision was made in Washington.

Stauffer contested a citation for an exposure over 25 ppm. The alleged number was reduced, then the citation dropped.

Several companies have been told that employee complaints account for 60 - 70% of all inspections, and have a very high priority.

Most companies contest their citations routinely to reduce the probability of serious repeat violations.

Four companies use only area monitoring to calculate employee exposure, and seven use a combination of area and personal monitoring. The average concentration of the reactor area was indicated to be as follows:

below 0.5 ppm	=	2 companies
0.5 - 1.0	=	6 companies
1.0 - 2.0	=	8 companies
2.0 - 5.0	=	8 companies

No one admitted to an average over 5.

Goodrich did not establish a regulated area around their new large reactors at Louisville. They have been inspected twice, with no comments.

No one is using the LSU badge-type personal monitor at present, although ICI and DOW are testing it, and preliminary results are good.

A show of hands indicated that essentially all plants experienced ten or more excursions per month over 5 ppm, and many go above 25 ppm on occasions. Pumps and compressors are still the major sources of leaks. Great American reports more than a year of satisfactory service on their sealed pump.

More companies alarm at 5 ppm than any other value. Most also use the zone alarm method, as do we, and the majority use both lights and audible alarms.

EPA UPDATE

D. Kuhn of Conoco reviewed the EPA situation. No new information was presented except that Region 6 has questionnaires out on fugative emissions and controls, and that EPA has a contractor inplant at DOW working on the same problem.

Firestone reported that Maryland is setting a fence-line limit on emissions. Massachusetts has also done so in at least one case, and Texas is proposing a similar rule, along with emission limits below that of the Federal EPA.

AP00050554

EMISSION CONTROL METHODS

The writer led a discussion of the methods of disposal of vinyl chloride. An outline is attached. Twenty seven companies are using incinerators, four carbon beds, and two use solvent extraction.

In a discussion on frequency of opening large storage vessels, the minimum frequency seemed to be about three years, with many taking five to seven years, or longer. Only British Plastics reported any evidence of any corrosion problems, and that after 5 - 15 years of service.

VCSA HISTORY

G. Schaff of Goodrich reviewed the history of the group, and led a discussion of its future. Most seemed satisfied with the present arrangements. The question arose as to the time necessary to retain the tapes made of each meeting, and members were asked to get advice from their legal groups.

TRANSPORTATION

R. Wilson of Stauffer discussed the recent DOT rule HM144, published 15 Sept. and effective 19 October. It requires modification to existing or new uninsulated cars in the transport of hazardous liquids, including VC, EDC, ammonia, and similar products.

Shelf couplers will be required by 1979 on existing, and after Jan 1st, on all new cars. Estimated cost is \$1000/car.

Head Shields are also required, at a cost of \$3500, and weighing 1300 lbs.

Insulation is required to protect against a pool fire to maintain the wall below 800°F. after 100 minutes. Cost will be \$5 - 10M, weight will be increased 1 - 8 tons, and cars will be out of service 45 - 60 days.

Relief valve requirements have also been changed. The Compressed Gas Association has petitioned for a review of this requirement.

Placards and shipping papers have new requirements. One change has eliminated the cancer warning from the placard, so it will now be stencilled on the car near the dome. Specific wording on the cancer hazard and handling methods are required on shipping papers.

Midland ball float gauges and Drexelbrook capacitance gauges have replaced the older slip gauges.

P. Bogart of Tenneco urged that those who have not signed up for the mutual response group of Chentreck, do so (we have not.). He said that Congress seemed to be taking some action to consolidate the 200 - plus organizations now involved in emergency responses. The DOT and EPA have not resolved their disagreement over shipping hazards.

AP00050555

TRUE CONFESSIONS

J. Alvarez of Primex described a fire in their Pueblo, Mexico plant which occurred in June. Monomer was stored in 7 bullet tanks, 5 x 90 and 2 x 60 M gals. each. On the date in question, about 2.9 MM lbs. was on hand. An experienced mechanic was removing the top works from a plug valve on the bottom of one tank, and removed the plug bonnet plate rather than the top works bracket. The plug blew out and the 3" valve vented liquid. A visible vapor cloud formed in an area about 1100 x 800 ft. by 500 ft. high, and ignited at a neighboring plant. The liquid stream then became a torch playing on adjacent tanks which then ruptured one by one until all were destroyed. They used the ASME - UPV code for relief valve area calculations rather than the NFPA code, so had only 25% of the relief area that the latter would have furnished. They also had an inadequate water supply.

One man was killed and three other burned. Damage was over \$3MM. The fireball of the initial ignition destroyed the laboratory, library, and offices. Books were charred through, and bottles were melted from the heat of the fireball, but blast damage was minor.

They have installed a 200 ton bullet tank and are installing a 2000 ton sphere as replacements for these tanks. To reduce hazards in the future, these tanks are insulated, and have relief valves according to the NFPA code. The pump line is reduced to 2" size, with an excess flow valve. This reduced flow rate requires a day tank for charging. They have revised their safety program and emergency action instructions.

By a show of hands from the floor, it developed that most attendees do not know which code their plants used for reliefs. One company reported use of a special 4 way valve that allowed use of one or both attached reliefs, but would not permit both to be shut off at the same time.

Ten companies use excess flow valves on storage vessels, and many commented on the unreliability of those in sizes over 4 inches. Twelve companies now have foam systems installed. Nineteen use remote pneumatic valves, and 10 have fire-safe valves in this service.

Bob Franz of Union Carbide described briefly an explosion of a bulk polymerizer in their Texas plant on Labor Day. The final investigation report has not been presented to management, and will be made available to us later. A 6000 gal "non-solvent" reactor exploded with little or no apparent warning, burning two men who were about 75 ft. away, one of whom died later. There was severe damage in the immediate area, and the blast was heard 20 miles away. One large piece of the reactor was found 1600 ft. away. I was told by another Carbide employee a few days after the explosion that at that time they suspected an overcharge of initiator.

Esso of Canada reported on the corrosion failure of 304 vessels in PVC service which they told us about on our trip there earlier this year. They have seen severe corrosion adjacent to welds in their 11 yr. old clad 304 strippers. None was found in 316 equipment. Being clad, there was no vessel failure as Goodrich reported two years ago. They now make a dye penetration test every two months. Dow said that they had seen the same,

AP00050556

and at chloride concentrations of 10 - 40 ppm the worst rates were at pH of 3 - 5. They also have had ss bolts fail in the salt air in Texas. The vapor phase of their recovery system seemed to be the worst area.

Dale Francke described the incident of last January in the Escambia plant. The only comment from the floor was from Goodrich, who disables automatic valves in a work area by disconnecting the air supply lines.

Union Carbide reported that a reverse buckling rupture disk and knife assembly was reversed by hydraulic pressure without the knife cutting the disk, thus preventing the relieving of the disk in any future overpressure. They are going to a B S & B reverse buckling scored disk that does not require a knife. Borden said that they have three years successful experience with a scored Fike disk that does not require a knife, and have operated within 20 pounds of the set pressure without premature failure.

INJURY STATISTICS

H. Waltemate of Goodrich reviewed their accident history for the past few years. He pointed out the problem with the change in the data base from ANSI to OSHA, and suggests that the VC-PVC industry compile its own statistics, as do other special groups. This would be done by abstracting annually the OSHA log of injuries on the attached form, using data for the entire facility, not just PVC, and he will act as the clearing house for the data. I recommend that we cooperate in this.

The Goodrich experience has been well below general industry rates, but the incidence increased in 1974-5 as the result of discovering the angiosarcoma cases. Their on-the-job rates are about one-fifth of injuries at home.

EMERGENCY PLANNING

J. Van Winkle of Diamond Shamrock described several incidents at their plants which pointed up the failures in their planning methods. By a show of hands only 10 companies had held drills in the past year.

He suggested several common failings in this area.

1. Too much reliance on supervisory personnel.
Emergencies usually happen on off-shifts.

2. Too much involvement by supervision and guards.
They have better things to do in an emergency than lay hoses,
and are exposed to too much danger.

3. Failure to allow for turnover of personnel. Inadequate
training or assignments to keep the emergency group effective.

AP00050557

He discussed the strong effort to certify and unionize firemen in the Houston area. One result would be to shut down a plant in case of a strike.

INITIATOR STORAGE

A. Dixon of Goodyear discussed initiator handling techniques. The favorite storage method still is a walk-in freezer house with dual mechanical coolers, emergency power, and high temperature alarms. Eighteen companies use this method, and 10 of these are sprinklered. Twelve companies use the freezer chest method that we have.

His main points were as follows:

- 1) Follow IRI standard on storage quantities and separation distances.
- 2) Never return material to primary stock or reuse containers.
- 3) Rotate stock.
- 4) Assure air space between individual containers.
- 5) Workers should use plastic or rubber protective clothing.
- 6) Protect all containers on the work floor from heat and sparks.

Tenneco reported that they had a fire when a hydraulic shock in the fire header lifted the valve to the storage house sprinklers and filled the house with warm water. When this was discovered, the water was drained out and the cooling units restarted. A few hours later the whole lot of initiator fumed off.

A few companies use nitrogen or carbon dioxide instead of water. This does not seem useful, since there is enough oxygen in the peroxides to make the fire self-supporting.

There is a move in Europe to bulk transport and storage of a 25% solution of initiators. Lucidol is considering a frozen 25% suspension in water for those who wish to use the Goodrich procedures.

MISCELLANY

Georgia-Pacific has selected Crawford and Russell for their present PVC expansion program. This will include 3 contact fluid beds and two flash fluid beds, all from Niro, to get their rates up to 450 MM lb/yr. They also plan continuous stripping and additional blow-down vessels. They have no construction permits on this project yet. The monomer project has not been approved by the Board, but the caustic-chlorine expansion is going ahead.

AP00050558

TO: T. L. Carey

- 9 -

Vinyl Chloride Safety Assoc.
Meeting, October 6, 1977.

KemaNord has hopes that the Denmark project can move ahead. Local opposition has reversed itself and they are appealing the permit refusal.

JTB:djm

J. T. Barr

AP00050559

VINYL CHLORIDE SAFETY ASSOCIATION MEETING

THURSDAY, OCTOBER 6th - FRIDAY, OCTOBER 7th, 1977

STOUFFER'S VALLEY FORGE HOTEL, PHILADELPHIA, PENNSYLVANIA

<u>Thursday - 10/6/77</u>	<u>Agenda Subject</u>	<u>Discussion Leader</u>
0800 - 0900.....	Registration	
0900 - 0915.....	Business Meeting & Election of Officers for 1978.....	R. Henderson Diamond Shamrock
0915 - 1000.....	Vinyl Chloride Physiological Effects.....	Dr. R. W. McBurney Diamond Shamrock
1000 - 1030.....	Medical Surveillance Problems.....	H. Lloyd Georgia Pacific
1030 - 1045.....	Coffee Break	
1045 - 1115.....	OSHA Enforcement Action.....	H. Waltemate B. F. Goodrich
1115 - 1200.....	OSHA Compliance Practices Review.....	D. Rhodes Tenneco
1200 - 1300.....	Lunch	
1300 - 1345.....	EPA Update.....	D. Kuhn Conoco Chemicals
1345 - 1430.....	Emission Control Methods Review.....	J. Barr Air Products
1430 - 1445.....	Coffee Break	
1445 - 1515.....	VCSA History.....	G. Schaaf B. F. Goodrich
1515 - 1600.....	Transportation Update.....	R. Wilson Stauffer Chemical
1600 -	Major Accidents, Near Misses.....	J. Alvarez Primex
<u>Friday - 10/7/77</u>		
0800 - 0830.....	Industry Injury Review/Survey.....	H. Waltemate B. F. Goodrich
0830 - 0900.....	Planning for Disasters.....	J. Van Winkle Diamond Shamrock
0900 - 0930.....	Catalyst Handling.....	A. Dixon Goodyear
0945 - 1015.....	Open Discussion Period	

ADJOURN

AP00050560

METHODS OF EMISSIONS CONTROL

I. CHEMICAL

A. Acid Permanganate

Used in DEI tape monitor system, and disposable cartridge masks. Very expensive and limited by solubility in water.

B. Hypochlorite

Produces EDC. Less expensive, solubility limited.

C. Ozonalysis

Laboratory scale only. Patented. Very expensive, ozone disposal problem, possible explosion hazard.

D. Incineration

Most popular method, capable of low exit concentrations. Requires scrubber in most states, some reliability problems. Some companies use steam boilers.

E. Catalytic Destruction

Apparently used by two or three companies. Operates at somewhat lower temperatures than incineration, little or no auxiliary fuel.

II. PHYSICAL

A. Absorption in Solvent

Capable of good control, becomes progressively more expensive as exit limit is reduced.

B. Adsorption

Carbon only adsorbent used commercially. Capable of very low exit concentrations if unit staged and properly regenerated. Problems with impurity recycle, may need small incinerator in addition.

C. Cryogenic

Expensive. Also has impurity build-up problem. Not used commercially.

AP00050561

VINYL CHLORIDE SAFETY ASSOCIATION

Company Name _____
 Location _____
 Date _____

RETURN TO: H. Waltemate
 BPGoodrich Chemical Division
 6100 Oak Tree Boulevard
 Cleveland, Ohio 44131

YEAR	NON-RECORDABLE CASES	TOTAL CASES	DEATHS	LOST WORKDAY CASES				NONFATAL CASES WITHOUT LOST WORKDAYS	TERMINATIONS OR PERMANENT TRANSFERS	TOTAL CASES RECORDABLE INC. RATE *	LOST WORKDAY CASES INCIDENCE RATE **	CASES INVOLVING DAYS AWAY FROM WORK INC. RATE ***	DAYS AWAY FROM WORK ****
		Number of entries in Col. 7 of the log. (1)	Number of entries in Col. 8 of the log. (2)	Total Lost Workday Cases Number of checks in Col. 9 of the log. (3)	Cases Involving Days Away From Work Number of entries in Col. 9A of the log. (4)	Days Away From Work Sum of entries in Col. 9A of the log. (5)	Days of Restricted Work Activity Sum of entries in Col. 9B of the log. (6)	Number of checks in Col. 10 of the log. (7)	Number of checks in Col. 11 of the log. (8)				

Case Histories:

* $\frac{\text{No. In Column (1)} \times 200,000}{\text{No. Man-Hours Exposure}}$

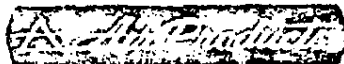
** $\frac{\text{No. In Column (3)} \times 200,000}{\text{No. Man-Hours Exposure}}$

*** $\frac{\text{No. In Column (4)} \times 200,000}{\text{No. Man-Hours Exposure}}$

**** $\frac{\text{No. In Column (5)} \times 200,000}{\text{No. Man-Hours Exposure}}$

NOTE: On the reverse side include a brief description of accidents, injuries, fires, etc., having experience value.

AP00050562



Date 24 November 1976

INTEROFFICE
MEMORANDUM

Subject Vinyl Chloride Safety Association

Meeting, Denver, 18-19 November 1976

To T. L. Carey

Chemical Manufacturing

(Location, Organization, or Department)

From J. T. Barr

Chemical Manufacturing

(Location, Organization, or Department)

cc: A. R. Adams	J. R. Marciando	W. Stuben
N. H. Brock	R. McGinnis	G. B. Speed
S. F. Burke	G. L. Miller	L. B. Tepper
A. J. Diglio	J. C. Novak	G. F. Tillson
D. H. Francke	E. A. Primeau	L. Tucci
G. J. Mantell	F. L. Riddle	D. D. Ward
	J. R. Russell	W. C. Wilde

The Vinyl Chloride Safety Association held its annual meeting in Denver on 18 and 19 November 1976. Seventy-six persons attended representing 22 domestic companies and 9 companies from seven other countries. Attendees for APCI were E. A. Primeau, W. Stuben and the writer.

Officers elected for next year were:

Chairman	- Roy Henderson, Diamond Shamrock
Vice Chairman	- H. Waltmate, BFG
Program	- H. Uptain, Conoco
Secretary	- E. Vermillion, Conoco
Treasurer	- W. Hager, Stauffer

The next regular meeting will be held in October 1977 at a place to be selected. There may be a short meeting in the spring to discuss EPA matters.

Mark Sobel of Hooker was program chairman. A summary of the various discussions is given below.

Transportation - J. Ferrell, Pantasote

There has been a growing increase in concern over the shipment of toxic and hazardous materials, especially by rail. Vinyl chloride is in the top 30 commodities by volume, and has had more than its share of publicity. There were 27 deaths and 655 injuries in 1975 from transportation of hazardous materials.

(320)

AP00050563

The Department of Transportation has prepared a manual on the hazards of several common materials. West Virginia, for example, has distributed this to all Civil Defense and mutual aid groups and asked them to hold seminars with local civil groups to draw attention to the proper action in case of emergency. The title is "Hazardous Materials, Emergency Action Guide 1976", and is available through the Governor's Highway Safety Administration, 922 Quarrier Street, Charleston, West Virginia 25301. It recommends evacuation of a 2000 ft radius from a vinyl chloride mishap, for example.

The DOT and OSHA seem to have developed a better working arrangement than have OSHA and the Coast Guard. The latter forbids OSHA inspectors on barges, for example, while OSHA has cited Pantosote for not making barges a regulated area all the time. The Coast Guard only requires regulation during loading or unloading.

Companies have not found a satisfactory solution to the C. G. requirement of a maximum of 5 ppm in the area of disconnected lines. Purging to meet this results in unacceptable inert buildup in the tanks. Goodyear uses a small vacuum pump, Tenneco has quick disconnect on the smaller lines, PPG purges with nitrogen, but none have been completely successful on eight inch or larger lines.

Many cities in Massachusetts and several in other states have complained about the lack of security on rail cars of monomer stored on tracks in the city, and some have forbidden it. More in-plant storage is being built by several companies. Pantosote was cited by OSHA in Passiac for no security patrol on their track.

Many PVC shippers complained about vandalism of their cars in transit. There is now available a cable-type car seal that is very difficult to break without proper tools. It is called Cable-Lok, and costs about 50¢ each. They are numbered like the standard type.

CHEMTREC - P. Bogart, Tenneco and R. Wilson, Stauffer

In an effort to stave off a threat by the American Association of Railroads to ask DOT for tighter shipping regulations on vinyl chloride, the Compressed Gas Association contacted the industry through SPI and requested participation in the voluntary assistance program of CHEMTREC. Eleven companies have replied affirmatively and three more are considering this request, APCI included. This program, operated by MCA, will attempt to contact the shipper first in case of an accident. If the car number is known, the lessor can be found in under four minutes through the railroads. The shipper has the prime responsibility to handle the problem, but may ask the receiver or a closer party, who has agreed to participate, to lend interim advice until he can respond.

Fear of legal involvement has slowed the response of several companies; APCI included. The purpose is to provide guidance and information on the hazards involved to the local authorities until an adequate response team can respond. No physical activity is required. CHEMTREC would be responsible for medical or toxicity advice through their toxicology team.

AP00050564

The Compressed Gas Association has attempted to develop a vinyl chloride field repair kit similar to that used for chlorine, but has been unsuccessful because of the design of the dome on the cars. They recommend that new cars be ordered with two inch valves in a twenty inch dome so that one can be developed.

There were 44 incidents with VC cars in the last three years that came to the attention of the CGA, of which 18 were due to improper gaskets, plugs, etc.

There are three major modifications to the DOT rules on shipping hazardous materials that affect VC, (See FR of 26 September 1976 for a reissue of Sections 171-177). HAMAC is holding regional seminars on this revision. These three points are:

1. Car and truck markings. The words Vinyl Chloride must appear on the right end of cars in letters at least four inches high. Effective 1 January 1977, see Section 172.330.
2. A new placard must be in use by at least 1 July 1977 and the cancer suspect agent statement which was on the old placards must be placed elsewhere. Most suppliers are putting it on the dome cover.
3. Also by 1 July, the shipping papers for the empty car must contain the same contents description as required now for full cars, and the valves must be plugged and domes pinned.

There have been three major incidents involving flammable car punctures in the last five years with a total loss of \$30 MM. The DOT probably will announce in the next two weeks a new regulation on car design that will make the present fleet of type 112 A cars obsolete by 1980. Headshields, insulation, and a new type coupler will be required. The conversion cost has been estimated at \$10 M per car and the added weight will be up to 14 M lb, depending on the type insulation used.

It was the sense of the group that more should be done by the industry to provide advice and assistance in the case of emergencies. Only two companies now have repair kits and trained crews. Various groups have training films available. No method of action was proposed.

Large Reactor Safety, N. Faroe, Diamond Shamrock

This company operates reactors of two, five and twenty M gal size. For all reactors they have a step-by-step job safety analysis -- up to 300 different steps. Some of the standard procedures which they employ are a lock-out form for maintenance, an automatic deluge system activated by a flammable gas detector at 50% of the LEL, remote and fusible-link shutoff of major lines, a buddy system for vessel entrance, and high pressure alarms on the reactors.

In the large reactors they have automatic injection of short stop from a pressurized pot, activated within 5 seconds by any dip in motor amperage when the pressure is over 75 psig. They have stand-by power for instruments but not agitation (14 companies do), and redundant (duplicate) rupture disks under relief valves. They inspect the disks with a mirror each reactor opening (3 to 4 batches) and more closely when the reactor is entered. Sizing was done on a linear scale-up from satisfactory experience on smaller reactors.

AP00050565

They had used hydraulic wall cleaning, but have abandoned it because the 40 ft units are too unwieldy. They had one accident where a coupling failed. They plan to continue the bulky system because of the requirements in new regulations that seem to discourage other methods. California cited BFG for use of the emergency light system.

In a discussion of short stops it developed that several companies have found the nitrite solution suggested by Union Carbide not to work with some combinations of pH, initiator and recipe.

There were no other reports of stress corrosion failure in stainless reactors. General time fit find a stainless knock-out pot that had stress-corroded badly, and are replacing it with black iron, but will maintain a saturated solution of sodium carbonate in it to combat corrosion and iron pickup.

Initiator Handling - G. Schaff, BFG

This company, as have most, has gone to commercial deep freeze units for initiator storage, and reports a sharp decline in incidents, from five in 1972 to zero in 1976. They have a hazard classification slightly different from NFPA or SPE, as follows:

- Class I IPP
- Class II 29% ACSP in DMP, SBP or L-225
- Class III 25% IPP
- Class V Lauroyl peroxide

They have obtained U. S. 3,825,509 on preparing emulsions of initiators in water which allows automated handling and permits storage for several days at 35° to 50°F. They would give such mixtures a safety rating greater than V.

OSHA

A Mr. Jack D. Tome, of the Denver Regional OSHA office was an invited speaker. He reviewed the history of the Act and the sources of the standards, particularly those on toxic substance exposure. He gave a fairly reasonable and balanced presentation which he emphasized was his personal view.

He agreed that no person could work satisfactorily for eight hours with a respirator because "it had to hurt if it fit properly", and there were communication problems. He emphasized that OSHA always checks on respirator training programs. He said that OSHA will support management in forcing men who wear respirators to be clean-shaven.

He was surprised that there had not been more strenuous industry objection to the action level concept and the record keeping provisions of recent standards. OSHA plans an action level of 85 decibels if Corn stays in office.

Corn has started a program to have all foundry citations reviewed at the national level to assure more uniform application, and hopes to extend this to other industries.

AP00050566

For citation purposes, the employer will always be held responsible for employee violations of safety rules; but the courts often review the citations on proof of uniform enforcement.

He predicts that standards will issue in 1977 for toluene, benzene, cotton dust, trichlor, chloroform, noise, carbon monoxide, and MOCA, with guidelines for lead, mercury and silica dust. Methanol and nitrogen oxides will be later. NIOSH has a list of over a hundred suspected carcinogens they want action on.

J. Degenfelder of Borden led a later discussion of OSHA activity. Variance has been granted to Great American to record exposure results on magnetic tape. Several companies have gotten variances to allow contractor's men to work in regulated areas. Hooker has applied for a variance on the new 3 M mask (see below). Pantasote has a variance for the Eocom monitor system. Conoco has a variance for half-face masks with canisters up to 10 ppm. It was reported that OSHA has extended the period for canisters without end-of-life indicators, but this was not confirmed.

Differences between regions in their enforcement rules continue. In region VI, inspectors turned off the monitor pump when the employee wore his mask, but in region III, the inspector turned off the pump if the employee left the regulated area. Borden and BFG did not get citations for exposures slightly above 1 ppm. The correlation between OSHA and industry readings are now fairly good, with OSHA normally low.

Dow and Conoco were cited on their own report for massive exposures (greater than 100 ppm) and several others were not. The primary difference seemed to be good evidence of personal exposure.

Firestone is contesting a citation for no medical certificate of fitness on the grounds that the doctor will not give one and OSHA will not provide guidelines for a medical decision. There is no general agreement among companies as to the action to take if a person is exposed. Most do nothing unless there are acute symptoms. Eight reported no emergency releases since April, eleven had one, eight had two or more.

Thirteen companies had OSHA inspections since April, four had two or more. Sixteen, including all the monomer suppliers, had none. OSHA does not now plan to revise the field enforcement manual.

Most companies report less than 10% failure on the first round blood tests, and most will return the employee to vinyl chloride exposure if the blood tests return to normal later. Drinking before the test is the principal reason for failure. Dow put their men who failed to get 70% on the pulmonary function test on an exercise mill with masks for one hour to be sure they could function in the masks.

Borden does not label some latices, Pantasote does not label compounds, most dispersion resins are not labeled, but no one ships suspension resin yet without labels. Several are considering it seriously.

AP00050567

Exposure of women of child-bearing ability is of much concern. Ten companies do not permit them in plants, but some of those do let them work in laboratories. We, General Tire, and Pantasote have been told by EEOC that they must be allowed to work. Firestone has not had an answer, and Stauffer included their plan to exclude them in their affirmative action plan, which has not been rejected.

Leak Prevention - H. Jewett, General Tire

This company has replaced all flanges over six inches, including manways, and spent a great deal of effort on selecting proper gasket materials. Many types of flat asbestos are too permeable to use. They have gone to spiral wound gaskets on manways. Proper torque is most important and very difficult to assure. They bench test all valves before placing them in service.

Their leak patrol covers the plant three times a week, and they find that simple tightening of leaks usually is not effective. Twelve companies said that they have a daily patrol, but many cover only the most troublesome points on a routine basis. General Tire has not had wholly conclusive results from the use of a sonic leak detector.

Job Safety Analysis - H. Lloyd, Georgia Pacific

This company relies heavily on National Safety Council publications for their program, especially a book called "Communications for Job Safety". About ten companies indicated that they use a similar procedure. The primary steps were given as follows:

1. Select the job for analysis, choose proper job scope -- a reasonable unit of work. Start with those having the worst history.
2. Break down the job into basic steps. Use a man experienced in the job, and analyze for hazards of each.
3. Determine the safe method for each step using NSC work sheets. Include actions, equipment, environmental problems.
4. Provide alternative methods where applicable, minimize hazards involved.

Medication and Training - T. Zelinsky, Hooker

He used an analysis of a recent accident at Hooker where two men were burned by decomposition of initiator to illustrate a job instruction program. When they investigated the underlying cause of this incident, they found several problems.

1. Inconsistency between shifts due to inadequate supervision and short cuts.
2. Condoning of poor performance -- same causes.
3. No clear cut line of command, confusion over who gives orders.
4. Training not used effectively.

AP00050568

In an effort to improve they have:

1. Hired a training officer to assure uniform procedure.
2. Rotated some supervisors to other shifts. This caused initial resentment but gave long term improvements.
3. Resumed a safety award program and started a newsletter for employees.
4. Formed a labor/management safety committee.
5. Instituted first aid training for hourly employees.
6. Encouraged employee participation in maintenance planning.

Their employees were interviewed by an Industrial Psychologist with the principal finding that the men felt untrained. They also wanted more leisure time, so the company built a recreation field and attempted to go to a 12 hour shift, but the union refused that. (Georgia Pacific has been able to work out this arrangement.) Five companies indicated that they do routinely rotate supervisors among the shifts.

Balancing Production and Safety - J. Palensky, Robintek

There is always a conflict between proper maintenance and maximum production. This company had always given safety-related work "first priority", but this did not prove satisfactory. They now have three classifications.

1. Immediate - probability of injury
2. 48 hours - less imminent danger
3. Routine - no danger

Any supervisor can issue a safety work order and assign priority, as can management or the labor/management safety committee. Production and maintenance supervisors sometimes differ on priority of a given item, with the production men usually being more conservative.

Miscellaneous

Eight companies use air bags for personal monitoring, 26 use carbon tubes. BFG and Ethyl are testing the badge developed at LSU, which should be commercial soon from a company called Real, Incorporated, Box 3341, Baton Rouge, Louisiana 70821.

All companies except two use GC for area monitoring. Firestone is gradually replacing their Miran infra-red and Pantasote has the Eocom systems.

AP00050569

Union Carbide reports better results with electropolish than fine mechanical polish on homopolymers, and about the same results on copolymer.

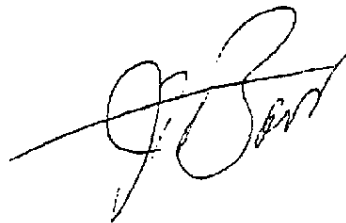
Firestone has tried most of the antifouling techniques available, with about the same results as we.

Electrochemical industries of Israel will use centrifuge effluent as cooling tower feed after hydroclone treatment.

Three English companies are expanding -- BP, BIP, and ICI. Business is very good at present, but a drop off is expected soon.

The 3M Company showed a model of a new disposable half-face respirator with a built-in indicating cartridge. This is being tested by NIOSH, and they expect approval soon for use up to 10 ppm. It will be sold at about \$7.65 each through distribution. This looks to be the best unit of its type yet. A sample was obtained.

Noury Chemical Company confirmed that ACSP and IPP are the two worst-fouling initiators. They are working on higher homologues of IPP, but these will be more expensive on an efficiency basis. They say that sales of P-16 are increasing, so people must have learned ways of overcoming the glossy-bead problem.

A handwritten signature in dark ink, appearing to be 'J. B. Smith' or similar, written in a cursive style.

AP00050570