May 26, 1967

Ontario Department of Labour,
Industrial Safety Branch,
8 York Street,
Toronto 1, Ontario.

Attention: Mr. H. Y. Yoneyama, P.Eng.,
Director & Chief Inspector.

Gentlemen:

On March 3, 1966, three representatives of B.F. Goodrich Canada Limited, Messrs. F. R. Hoddle, E. R. Clayson and J. Nagy, met with Mr. Yoneyama and his staff to discuss procedures relative to the entry of polymerizers at our Welland, Ontario polyvinyl chloride plant.

At the meeting in question, the request of B.F. Goodrich to have polymerizer entries reclassified from hazardous (regulation 12.(4)) to safe (regulation 12.(3)) was denied. However, I understand that Mr. Yoneyama stated that he would be happy to discuss the matter again whenever we felt that we had new evidence to present.

Since that time, Mr. W. E. McCormick, Industrial Hygienist of our corporate head office in Akron, Ohio, has had his staff conduct two series of tests at the Welland Plant. These tests of the atmosphere in the polymerizers utilized the gas chromatograph technique and were analyzed by scientists in our Avon Lake, Ohio laboratories.

In addition to these tests, additional testing was conducted using a flame ionization tester. These tests substantiated the results of the gas chromatograph analysis as well as those of the Ontario Department of Health (H. Wall to R. G. Elson, Oct. 21, 1965). We are, therefore, writing to request another meeting with personnel of the Industrial Safety Branch to further discuss polymerizer entry in light of these test results. If a suitable time can be arranged, Mr. McCormick, together with Mr. Hoddle, Mr. Nagy and the writer will be available to meet with you.

Attached to this letter are copies of the following procedures which were requested by Department of Labour personnel at the aforementioned meeting:

1.	Proposed Polymerizer Entry Procedure	Exhibit "A"
2.	Proposed Vessel Rescue Procedure	Exhibit "B"
3.	Polymerizer Safety Check Sheet	Exhibit "C"
4.	Equipment Description and Flame Ionization Test Procedures	Exhibit "D"

In Exhibit "A" above, reference is made to an electo-mechanical sentinel which we propose to use as an additional safety precaution. This device, which the cleaner places at the polymerizer manhole on entry, gives a distinctive, audible signal every few minutes. The cleaner must silence this audible signal by pulling a rope attached to the device. If this is not done, then, of course, one of the attendants on the floor immediately comes to the polymerizer to determine the reason.

It is our opinion that, based on the test results and the safety procedures proposed, entry of our polymerizers should be classified safe (regulation 12.(3)).

We trust that you will be able to schedule a meeting in the near future, and we shall anticipate your reply.

Very truly yours,

B.F.GOODRICH CHEMICAL CANADA
A Division of B.F.Goodrich Canada Limited

D. A. Brooks,
Plant Manager.

DAB/bd
attach.

cc: Mr. P. B. Mason
Mr. R. A. Woodrow
Mr. W. E. McCormick
Mr. J. M. Hyslop
Mr. J. Nagy

PROPOSED POLYMERIZER ENTRY PROCEDURE

A. Safety Precautions
B. Poly Entry
C. Hazardous & Special Entries

A. SAFETY PRECAUTIONS

1. Residual Vinyl Chloride
2. Polymerizer Agitator
3. Safety Check Sheet
4. Duties of Check-out Man

1. Residual Vinyl Chloride & Other Monomers - Vinyl chloride gas is an anaesthetic very much like ether, and an overdose can prove fatal. The presence of the gas can usually be detected by its characteristic odour. Unfortunately, this method of detection is not completely reliable, for the odour cannot be detected by persons with slight colds or poor sense of smell. Slight exposure causes a condition of dizziness or lightheadedness, and upon continued exposure, deep slumber will result. Vinyl chloride vapours are highly explosive in the range 4% to 22% by volume in air. Therefore, no open light or spark producing equipment should be used in the presence of vinyl chloride. Do not place a light over a polymerizer manhole before the polymerizer has been evacuated, as the light may have defective wiring. These are the reasons why we have to remove the vinyl chloride and other chemical fumes (vinyl acetate, vinylidene chloride, etc.) before entry or cleaning. Note: When a recovered poly is first opened, its contents are right in the middle of the explosive range. All safety precautions must be observed to the letter when a poly is first opened.

2. Polymerization Agitator - If the poly agitator should start with a person in the poly, this person would literally be cut to ribbons. To ensure that the agitator will not start, proceed as follows:

Mounted on the side of each poly is an explosion-proof electrical socket. Each agitator motor has a cord and special plug which plugs into this socket to provide electrical power to the motor. In order to lock out the poly agitator, turn the plug to the "off" position (counter clockwise) and pull it out. Grasp the plug by the body at the widest part near the top where it enters the socket. Do not pull the cable or the part of the body where the cable enters. This practice results in the leads into the plug becoming loose and, in some cases, shorting. This represents a hazard to personnel from a shock standpoint and also a spark hazard. Then, put the plug in the holding receptacle and lock it in with the personal padlock that has been provided for this purpose. This lockout procedure will be demonstrated to all new employees by their Foreman. After the plug has been locked in the holding receptacle, the poly cleaner will keep the key on his person until he himself unlocks the padlock. It is contrary to safety regulations for any employee to remove another employees lock from an electrical lockout.

Polymerizers without physical disconnect cannot be entered unless Permission to Start Work Permits (as per General Notice SA-33) obtained from the Shift Foreman. Polymerizer ladder and floor mat should not be put in until the agitator is locked out.

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3. Safety Check Sheet

a. A Safety Check Sheet must be completed by the polymerizer cleaner and a checkout man before the cleaner enters a polymerizer. All items must be completed, checked off and signed by the cleaner and the checkout man.

b. If the polymerizer has been partially cleaned at the change of the shift, the incoming parties must complete another poly safety check sheet before entry.

Note: In case of polymerizers without physical disconnect, a new Permission to Start Work Permit must be obtained from the Shift Foreman.

4. Duties of Check-out Man - The duties of the check-out man are:

a. To take a Combustible Gas Indicator test. Note...Polymerizer Cleaner and the Check-out Man have to use different Gas Indicators when taking gas tests. Two Gas Indicators must be used.

b. To make sure that all safety checks stated on the Polymerizer Safety Check Sheet are met and the polymerizer is safe for entry.

c. To assist the polymerizer cleaner to enter.

d. To position polymerizer exhaust hose after entry inside the polymerizer.

e. To lower the electro-mechanical sentinel.

f. To be on constant attendance on the polymerizer floor.

g. To respond to any assist call.

h. To check each polymerizer cleaner periodically.

B. POLYMERIZER ENTRY

When the Polymerizer Safety Check Sheet is completed by both the Cleaner and a Checkout Man, it is considered safe for entry. The following points should be remembered at all times:

1. Polymerizer agitator must be locked out.

2. Two 0% readings must be obtained before an entry can be made.

3. Polymerizer must be isolated to prevent vapours from entering.

4. Emergency safety equipment must be on the polymerizer floor.

If it becomes necessary to enter before 0% reading is reached, Hazardous Entry requirements will be observed.

As one man (Operator, Foreman or a Checkout Man) must always be present on the polymerizer floor in addition to the ...

cleaners, it is this man's responsibility to check every polymerizer cleaner periodically.

Note: On hearing the assist call from a polymerizer cleaner, the man staying on the poly floor (Operator, Foreman or Checkout Man) must immediately proceed to the poly and find out the reason for it.

C. HAZARDOUS & SPECIAL ENTRIES

When it is not possible to recover polymerizer to a safe entry level, a Hazardous Work Permit will be required. It will be up to the Shift Foreman to decide if further consultation is necessary before entry permit (HWP) can be OK'd. The minimum requirements for this kind of entry will be as follows:

1. Isolation and lockout.
2. Standby.
3. Ankle straps.
4. Harness and safety rope.
5. Air fed respiration mask is on.
6. Air fed respiriation mask for standby is at hand.
7. Non-spark tools used. (For readings higher than 500 ppm).
8. Chain hoists in placed extended. (For large polymerizers).
9. Safety rope ladder is at hand. (For large polymerizers).
10. Maximum ventilation is provided.
11. Emergency safety equipment is available (chain hoist, stud cover and step ladder).

As this constitutes entry into a hazardous atmosphere, the standby man must have the rope to the cleaner's harness in his grasp at all times. He must see that the hose to the air fed respirator and the safety harness lines remains untangled and that the air line does not kink. If an emergency arises; power failure, fire, vinyl spillage, etc., or the actions of the cleaner appear abnormal, the standby will notify him to come out of the polymerizer. If the cleaner is unable to do so, the emergency alarm will be sounded immediately and emergency removal procedures carried out.

Julius Nagy/bd
August, 1966