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DISCONNECTING ""HOT"" HOSE LINES

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DISCONNECTING "HOT" HOSE LINES

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June 26, 1956

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## DISCONNECTING "HOT" HOSE LINES

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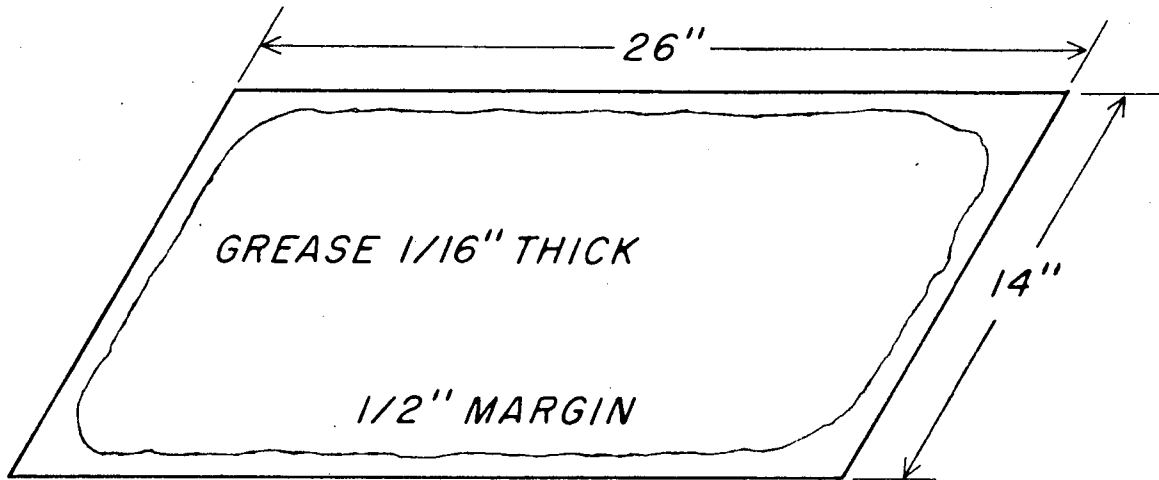
June 26, 1956

The safe disconnection of radioactively contaminated hose lines can be surprisingly difficult and is a problem frequently faced in radiochemical laboratories. Although in low-level work hose lines may be carefully slipped off nipples, a much better method is necessary when many curies of activity are handled, since the escape of even a very small fraction of the contaminant in the lines would be serious. Recently several thousand curies of <sup>a</sup>the highly dangerous alpha emitter together with its fission products were chemically processed in four "hot cells". At the completion of the processing, the 2-inch process gas lines had to be disconnected from the cells to allow disposal of the equipment. The original plan was to weld shut a section of plasticized vinyl tubing by radiofrequency heating, and then to cut through the welded section. This plan failed, however, because of degradation of the material from radiation and chemical attack, and some other way had to be found. The substitute method worked out was completely effective, used readily available materials, and required no special technique. Here is how it was done:

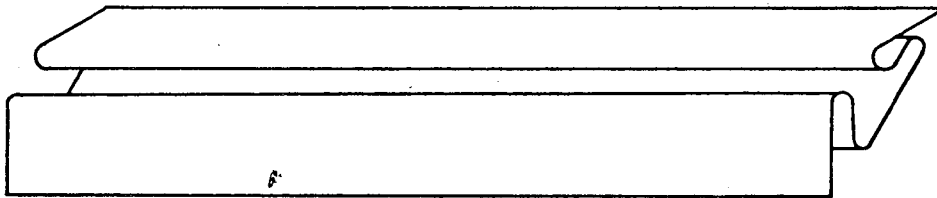
A 14-by-26-inch sheet of 0.004-inch vinyl film was cut, smeared on one side with a 1/16-inch-thick coating of ball-bearing grease, and folded into a double lengthwise pleat. After the hose clamp holding the hose line on a nipple was removed, the greased sheet was wrapped around the joint to be broken. (The length is such that three complete wraps are formed.) One edge of this sheet was taped to the nipple, the other to the hose. As the hose was pulled off the nipple, the pleat unfolded, allowing about a 5-inch separation between hose and nipple. The free section of film was gently squeezed together with padded tongs to make a flat section, which was then cut with scissors, leaving each end sealed by the greased sheet.

The properties of ball-bearing grease (such as for automotive front wheel bearings) are just right for this application: the high cohesiveness and adhesiveness provide a good seal, and the lubricating qualities allow the sheet to slide easily. Fifteen joints were disconnected in this manner without escape of any trace of the contaminant in the hoses.

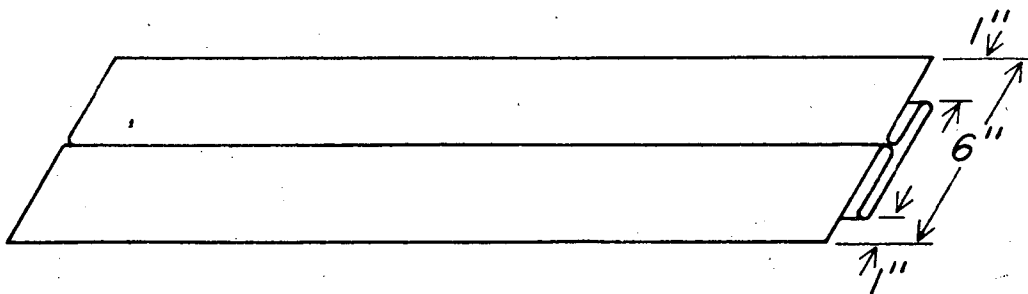
1. Cut out a piece of 0.004-inch vinyl film and coat it with ball-bearing grease, being careful to leave clean margins on the sides.



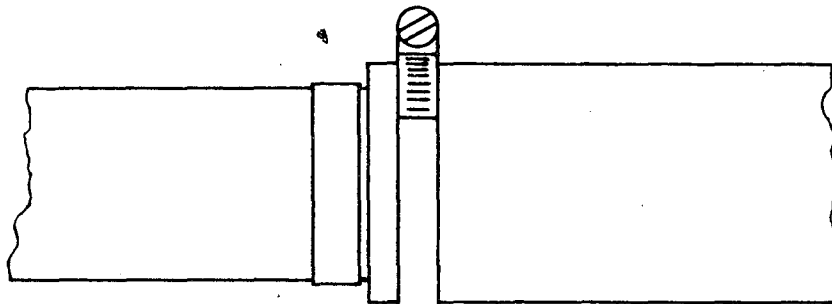
2. Reduce the width by folding together the middle 8 inches of the greased surface.



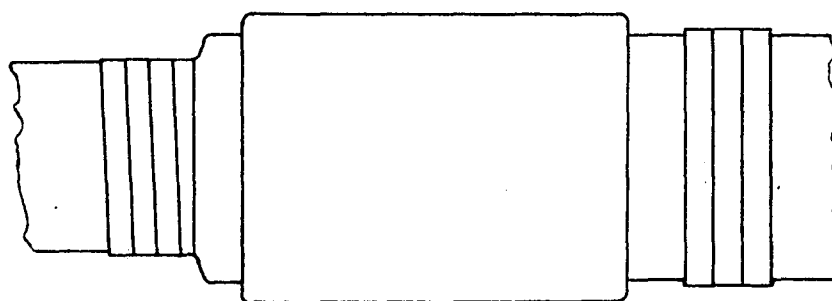
3. The folded and pleated strip, with a 1-inch width free along each side, can be held in the folded position with small pieces of Scotch tape on the ungreased outer side.



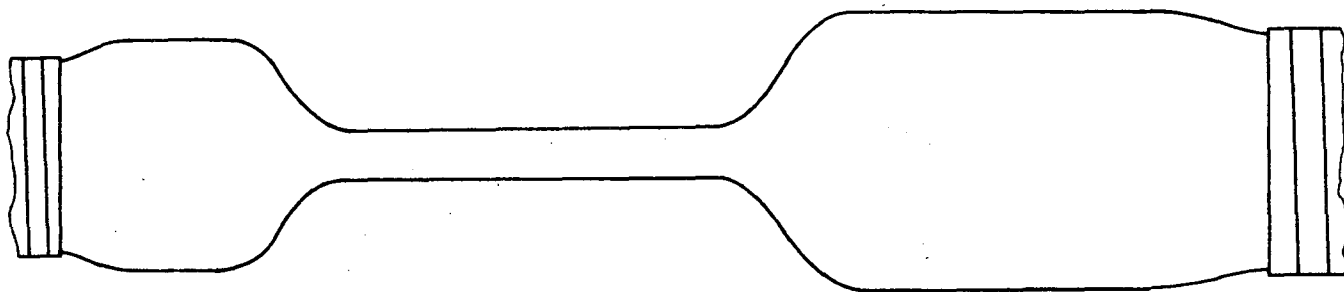
4. Wrap nipple with a layer of Scotch No. 400 tape (double-control pressure-sensitive) close to hose end.



5. Remove hose clamp, wrap folded membrane around joint, greased side in. Secure sides to nipple and to hose with Scotch No. 33 tape (electrician's vinyl tape).



6. Pull joint apart, allowing membrane to unfold. Flatten free center section with padded tongs and cut apart with scissors.



7. Protect each end with another stronger seal, such as a rubber glove.



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