STANDARD FORM NO. 64

Office Memorandum · UNITED STATES GOVERNMENT

TO : Isotopes Division Files

DATE: December 15, 1953

FROM : Oscar M. Bizzell

SUBJECT: VISIT TO ISOTOPES SPECIALTIES COMPANY, 3816 SAN FERNANDO ROAD, GLENDALE, CALIFORNIA, DECEMBER 7, 1953.

Mr. J. D. Vaden, Industrial Hygiene Engineer of the Los Angeles County Health Department, and I visited with Mr. Allen M. Goldstein, Technical Director of the above company to review their facilities and techniques for handling radioisotopes. During the past year this company has been authorized to use a total of several curies of the following radicisotopes: C 14, Co 60, Po 210, I 131, Ir 192, Th 204, and Sr 90. In other words this company, from the standpoint of authorizations issued, is doing a fairly good sized radioisotope business.

I say without any reservation that this is one of the worst radioisotopes programs that I have ever encountered. Housekeeping in this laboratory is practically beyond description. Contaminated materials and equipment are all over the place and it is necessary for one to pick his way through in order to keep from contacting contaminated objects or equipment. I picked up 2 mrep/hr on my shoe soles while I was in the laboratory.

All of the radioisotopes work is carried on in a one-room laboratory approximately 18' x 36'. The back part of this rather large room is set aside as a hot laboratory area. It is approximately 10' x 18'. This small area is equipped with a laboratory bench, a porcelain enamel sink and a fume hood. (1) Sr 90 sources, in which a total of several millicuries of Sr 90 is being processed, is carried on right in the same area where radioactive pharmaceuticals are prepared. The preparation of radioactive pharmaceuticals includes the making up of chromic phosphate solutions and preparation of doses of I 131 for human use.

On the opposite end of this bench, and also in the fume hood (2) Sr 90 is pipetted without benefit of remote pipetting equipment and placed in a small capsule. (An eye dropper bulb pressed over conventional pipettes is claimed to be remote pipetting.) These capsules are then heated under an infrared lamp to take the Sr 90 solution to dryness. The covers are then placed on these tinned capsules and a ring of silver solder is applied prior to their being placed in a small electric furnace for soldering. The soldering operation is carried on in this small area where radioactive pharmaceuticals are being prepared.

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In this same area Mr. Goldstein showed me their setup for encapsulating Co 60. This encapsulation setup has been used for encapsulating sources up to 10 curies of Co 60. The encapsulation setup, as I saw it, consists of 4 steel blocks placed on the floor. The total thickness of these steel blocks is 8 inches. Behind these 4 steel blocks is a vice which is used for holding the capsule. (3) There is no shielding around the other 3 sides of the encapsulation unit, and immediately behind the encapsulation setup is an alumnium door leading to an outside area.

Approximately 10 feet to the right of this encapsulation unit and through an open driveway a bank building is situated. Mr. Goldstein explained to me that this bank building has a wall of 8 inches of solid concrete. Approximately 20 feet directly behind the aluminum door a dwelling house is situated. Mr. Goldstein explained, however, that this situation is perfectly alright since the lady who lives in the house also works for them, therefore, there is no question about the excess radiation in her area.

I pointed out that this high intensity radiation area, when sources are being encapsulated, was readily accessible to the sidewalk. The sidewalk is about 25 feet from the encapsulation setup and one could rather easily approach to within 2 ft. of the encapsulation operation. Mr. Goldstein explained that they always block the driveway with garbage cans in order to restrict access to the area during encapsulation.

This encapsulation setup is absolutely unsatisfactory from a health safety standpoint and should not be approved for encapsulation of more than 50 mc to 100 mc of Co 60 at most.

Storage of waste radioisotopes is also accomplished in this small high activity section of the laboratory. Mr. Goldstein explained to me that all of the contaminated waste they had ever accumulated was being kept in a garbage pail that appeared to be about 8 to 10 gallons capacity. A check with the survey meter revealed that the radiation intensity from this garbage can was considerably above 200 mr/hr at the surface. (See values attached to this report.) In an effort to afford some shielding to this radioactive waste container, ordinary red building bricks have been stacked around it and provide approximately 8 inches of shielding to the sides. The height of this shield is approximately 2 feet from the floor.

Radioisotopes received from Oak Ridge are set around at various spots in the laboratory and no effort is made to provide any sort of further shielding for them. The accumulation of several of these shipments plus the storage of waste products and the presence of countless numbers of contaminated pipettes, tongs, equipment, etc., causes the radiation level in this area to be quite high. (4) My dosimeter showed 15 mr for a stay of 30 - 45 minutes in this area of the laboratory.

I did not have a G-M count rate meter with me so I suggested that we use Mr. Goldstein's laboratory demonstrator in order to attempt to

determine the level of contamination in this area. (Note: See detailed survey data attached to this report.) He explained that the area might be a little contaminated but was agreeable to checking it with his laboratory demonstrator.meter. The instrument was placed in the center of the room and turned on; it was noted that the background radiation level at this point was quite high. Efforts at checking various pieces of equipment and surfaces caused the instrument to be thrown off scale. Mr. Goldstein readily admitted that the equipment was knowingly contaminated but stated that his laboratory per se was not contaminated. He argued that as long as he knew the equipment was contaiminated and when it was re-used for the same purpose there was no use in decontaminating it.

(5) Mr. Goldstein admitted that the handle on his water faucet at the sink was rather highly contaminated but since he was the only person that used the sink and since he knew that it was contaminated, no hazard existed.

In the center section of this rather large room and separated from the high activity area by two fume hoods placed back to back is the C 14 area. This consists of two tables pushed together in the center of the room and a hood with a glass reaction train mounted inside it. Mr. Goldstein explained that this hood was used for the hot runs of C 14 and that they processed as much as 50 millicuries of C 14 at a time under these conditions. There was a glass reaction train mounted on the tables in the center of the laboratory room but it was explained that this was used for lower levels of C 14. Mr. Goldstein stated that since C 14 is $35 a millicurie they always recovered their waste C 14 and never have any waste disposal problem with this radioisotope. The chemist who does their C 14 work is Mr. Selff. The facilities for handling and processing C 14 are marginal but this does appear to be the only possible safe part of the radioisotope work.

At the front end of this rather long laboratory room the counting equipment is situated. The technical equipment includes one Technical Associates scaler. The background in this area was a little high.

I attempted to draw him out on the disposal of contaminated waste and he stated that they had stored all the waste radioisotopes in the 8 to 10 gallon pail described above. He did state, however, that the background radiation from this pail was beginning to be a little troublesome in their counting operation up toward the front of the room and he requested information from me concerning approved ways and means of disposing of the waste. He had heard that there was 1 or 2 organizations on the West Coast offering a waste disposal service and indicated that he would like to contact them and make arrangements for disposal of this contaminated material. I gave him the name of Dr. Tom Lauritsen, California Institute of Technology, who is the only person in this area that I know of with arrangements with the Coast Guard for shipping radioisotopes out to sea for disposal.

Mr. Goldstein informed me that he was the only person who did any work in this small high activity area. He maintained that he knew where everything was and that there was no possibility of mixing up pipettes, etc.,

and causing cross contamination between preparation of Sr 90 sources and the preparation of radioactive pharmaceuticals. It appeared to me that pipettes were strewn around the place in a rather hap hazard manner, but he assured me that he knew what each one was supposed to be used for.

As mentioned above withdrawals are made sometimes from curie quantities of radioisotopes using simply a rubber bulb of the eye dropper type on the top of the pipette. Mr. Goldstein assured me that they had surveyed these withdrawals and he was not receiving an excessive exposure.

The equipment in this high activity area is very crude. Small pieces of transite are scattered around over the area and Mr. Goldstein informed me that these are used as temporary surfaces on which to work so that surface contamination may be better controlled. He readily admitted that these pieces of transite were highly contaminated but assured me that he knew they were contaminated, therefore, the situation was under control.

About half of the floor area in this high activity section has been covered with asphalt tile but the remainder of the floor is bare concrete. The inside walls of this laboratory are quite rough and abound with cracks and crevices. As a matter of fact the outside and inside of the walls, and the roof and the ceiling are the same piece of material.

The other worker in the laboratory is Mr. Carl Amlaur who is a partner with Mr. Goldstein. He was present during most of my discussion with Goldstein but had very few comments to offer.

II. Medical Examinations

I questioned Mr. Goldstein concerning medical examinations for himself and the other 2 workers in the laboratory. None are now being done. He told me that they had considered having blood counts made but had never done so. In view of the fact that they are handling large quantities of Sr 90 in an evaporation process, and other procedures that might lead to atmospheric contamination, I suggested to Mr. Goldstein that they considered having urine analysis made.

III. Laboratory Area

As noted above all radioisotopes work in Isotopes Specialties Company is carried on in a rather large room approximately 18' x 36'. The inside of this laboratory is of very rough construction and most of the equipment is rough. Mr. Goldstein explained that this would make it easier for them to throw things away without realizing much of a loss in case they should become too highly contaminated. (It would be interesting to know what Mr. Goldstein would consider too highly contaminated because the present laboratory facilities and equipment are in a very high state of contamination.) Mr. Goldstein's attitude was that they knew what was contaminated and therefore it was alright for it to remain contaminated.

The entire laboratory area is generally quite dusty and does not appear to be cleaned with any degree of regulatory if ever. The housekeeping

in this laboratory is extremely bad and it appears that the laboratory might be unsafe from the standpoint of handling regular non-radioactive chemicals.

Mr. Goldstein explained that their fume hoods all go to a common blower which is situated on the roof. He pointed out that there is no possibility of backdrafts since all hoods operate when the blowers are turned on and that there was supposed to be a louver in the system that would prevent backdrafts coming down the hood. The air from the exhaust duct is exhausted about 2 feet above the roof of the building. As pointed out above, this building is immediately adjacent to a dwelling house and is in a general residential and business district.

In reviewing the encapsulation setup I noticed that there was a pair of bolt cutters that were lying behind the 4 steel bricks. I asked Mr. Goldstein if they ever chopped up any radioactive Co 60 prior to encapsulation. He told me that they did and that these bolt cutters were used for this purpose. He said that they were contaminated, therefore, they had laid them on the floor back of the 4 steel bricks. Since he knew they were contaminated he assured me that they were alright.

For storage of Co 60 and other gamma emitting radioisotopes which have been approved for Isotopes Specialties Company, Mr. Goldstein knocked a hole in the concrete floor and dug out some earth in order to make a subterranean storage pit. This hole in the ground appeared to be about 6 inches in diameter. The top of it is plugged with a lead cap which appears to be about 2 to 3 inches thick.

IV. Health Safety Equipment Techniques

One or two radiation signs have been posted in the laboratory but these appear to have little meaning since the entire back part of the laboratory is highly contaminated and abounds with contaminated equipment. Items for contamination control includes broken up pieces of transite board and regular roofing paper that is spread around at various spots in the laboratory. In view of the above, it is rather hard to understand how Mr. Goldstein is able to store all of his contaminated waste material that he has ever collected ir an 8 to 10 gallon can.

Remote handling equipment is practically non-existant; the only remote tongs being a couple of very short handled devices for encapsulating up to 10 curies of Co 60. Handling techniques in general are the worst that the writer has seen.

On one of his applications Mr. Goldstein states that floors, bench tops, and equipment are monitored after every major operation and weekly in every case. I asked him if he had any records on levels of contamination in the laboratory and he replied that he did not. He stated that their survey pointed out what was contaminated in the laboratory and that they remembered that this was contaminated and treated it as a contaminated item.

V. Instrumentation

Mr. Goldstein reported that he wears a pocket dosimeter but never keeps any record of the dosimeter readings. Some of his former applications stated that film badges would be worn by all personnel doing hot work. I asked to see records of personnel exposure. In answer to this Mr. Goldstein took me to the office where the secretary produced a book that had one number on one of the pages in the book. This number was 474 and did not indicate whether it was mr or r. There was no name on the page and there was no date for this exposure, if it was an exposure. In other words, after approximately 2 years of operation Mr. Goldstein could only produce one figure and this was very incompletely described, but he did claim that this was his personnel exposure records. I asked about personnel exposure records for the other two men who work in the laboratory. Mr. Goldstein assured me that he does the majority of the hot work and that there is really no need for having personnel exposure records on these people since they handle low activity material. During our discussion concerning his encapsulation of the 10 curie source of Co 60, Mr. Goldstein assured me that he had personnel exposure records. In view of the one value which was very incompletely listed I asked him if he actually knew the amount of exposure he got while doing this encapsulation. He assured me without doubt that this was his exposure level and that this 474 mr was over a two weeks period.

Mr. Goldstein stated that this made the instrument a real "cat's whisker" for detecting beta radiation. In addition they have the laboratory demonstrator which is kept at the front of the room. This is the instrument that Mr. Goldstein brought to the back of the building in order to show me that the laboratory was not contaminated.

Technical instruments include a Technical Associates scaler and an end-window G-M tube. It is reported that these are calibrated against NBS secondary standards.

VI. Wastes

As noted above Mr. Goldstein assured me that they have saved all of their radioactive waste and that it is being kept in their 8 to 10 gallon container in one corner of their hot laboratory.

VII. Records

Records are supposedly kept on accountability but my review of these indicated that they were very incomplete. I asked Mr. Goldstein if he always informed the Isotopes Division about shipments of radioisotopes to his customers. He assured me that he did and I proceeded to review records of purchase orders sent to him. There were bills of sale to many institutions and persons that the writer had no knowledge of as radioisotope users, however, it is not impossible that they are autherized users. I noted that neither the purchase order nor the bill of sale for the 10 curies of Co 60 to Beckman Instrument Company bore any authorization number. I asked Mr. Goldstein if he could produce the authorization

Survey instruments include a Jordan Model Ag 50 survey meter. This is a labe design which has a small hole in the bottom of the chamber.

for the 10 curies of Co 60. He assured me that he could and asked his secretary to dig it out. There followed a search of about 30 to 40 minutes for this 374 but it never was found. Either Beckman Instrument Company was never authorized to obtain this source or they did not give a copy of their authorization to Mr. Goldstein, or in the hodge-podge record system that Mr. Goldstein keeps this had been lost. Several times during his search for this 374 and in the presence of his secretary he made the statement that he was going to have a straightening out with said secretary as soon as I left. With their system of record keeping the writer does not see how it would be possible to find anything because records are thrown into a general folder and these are shuffled around and have no rhyme or reason about their filing.

VIII. Summary

On our way out to Isotopes Specialties Mr. Vaden told me he had heard that Mr. Goldstein's services with Technical Associates were terminated because he got their laboratory into such a high state of contamination and that it was necessary for them to throw away practically everything they had and start over again. After my review of the facilities currently in use by Isotopes Specialties Company, it is easily conceivable that this actually did happen.

I pointed out to Mr. Goldstein that his laboratory did not begin to meet the standards which we feel are necessary. I stated to him that his laboratory was very highly contaminated. Mr. Goldstein was somewhat rebuffed by this statement and said that he did not consider this his laboratory per se was contaminated. He said that this was a very strong accusation on my part and that he did not believe I could back it up with an actual laboratory survey. He again stated that if places and items of equipment in the laboratory are known to be contaminated this should be satisfactory from a radiological safety standpoint. It simply boils down to the question of what constitutes a contaminated laboratory.

I told Mr. Goldstein that I would send him the standard AEC Inspection Form 352 and would write him a letter detailing my observations in his laboratory and issuing instructions for his compliance. He stated that he would prefer to keep this sort of thing out of the mail if possible and asked me to give it to him verbally. In view of the fact that Mr. Goldstein's laboratory needs a complete overhauling and re-arrangement from top to bottom and in view of the fact that he questioned every recommendation that I had made up to this point concerning the use and handling of radioisotopes in his laboratory I declined to give him the recommendations verbally and preferred to write him a letter. In answer to his question, I informed him that all of my recommendations would be based on information contained in D. R. Ward's paper entitled "Safe Handling of Radioactive Isotopes" and in the various handbooks from the National Committee on Radiation Protection. Mr. Goldstein finally admitted that he had a copy of Mr. Ward's paper in his files but had never taken the opportunity to read it. He stated that he had looked at some of the NBS Handbooks and felt that many of the recommendations were unrealistic and completely unworkable in an industrial type laboratory such as his.

Mr. Vaden informed me after we left that it was the general feeling of many of the health people in this area that Mr. Goldstein will do anything to earn a dollar. He stated that they were a little amazed that the Isotopes Division was continuing to issue authorizations to Mr. Goldstein but felt that we had more authority in the situation than they did and should be in a better position to appraise the possible hazards associated with the work.

Mr. Vaden also pointed out that it was generally felt that Mr. Goldstein would sell radioisotopes to practically any person regardless of whether they had an authorization. This is one of the reasons why I asked Mr. Goldstein for his records on bills of sale and shipping information.

I am of the opinion that if the Pure Food and Drug people ever got a look into the facilities being used for preparing clinical radioisotopes by Mr. Goldstein that somebody would be in for trouble. His conditions for preparation are very unsanitary, although sterilization may well take care of this. In my opinion there is a very high probability that his radioactive pharamceuticals may become contaminated with Sr 90.

Some discussion was held on the film badge service being offered by Isotopes Specialties Company. Mr. Goldstein took me through a toilet and into a very small room which he said was their dark room. He said that they were afraid to turn on the light for fear of possibly exposing something. From what I could tell in the dim light, this small room appeared to be "a hole in the wall" type of arrangement.

I asked him about his use of a densitometer for reading film badges. He stated that they did use one but did not know where the densitometer was. Upon returning to his office he asked his secretary where the densitometer was and she stated that she thought it was in a truck.

When I asked Mr. Goldstein about his use of film badges he stated that with him that this was just a "lark" and that he didn't actually feel that he needed a film badge. He did have on one of his badges at the time of my visit but as noted above this is primarily for appearance.

In addition to his work at Isotopes Specialties Company he is currently head of the area civil defense setup in the Glendale area. He pointed out to me that there was lack of information on emergency contamination levels for food supplies and water and that the civil defense people in this country did not seem to be able to agree among themselves about what constituted an emergency exposure level and an emergendy contamination level. He pointed out that the British will permit 100 r of total whole body radiation as an emergency exposure level whereas this country recommends a figure of 25 r. He stated that this causes considerable confusion in his efforts to set up the civil defense arrangement for the Glendale area, and that he would be most appreciative for any official information that would clarify these points. I agreed that I would cite him any literature reference that I might be able to run across upon my return to the office.

Recommendations

It is my recommendation that no further authorizations of radioisotopes be issued to Isotopes Specialtites Company until a very firm letter of

instructions has gone out to this company, these recommendations are complied with, and Mr. Goldstein's facilities reviewed again to determine compliance.

In addition, it is my observation that Mr. Goldstein's basic philosophy on safe handling of radioisotopes is very bad. His philosophy is that contamination and over exposure are perfectly alright as long as you know it is happening.

I would further recommend that all authorizations that have been issued to Mr. Goldstein at Isotopes Specialties Company be revoked. The primary suppliers such as ORNL, BNL, etc., should be contacted and any further shipments on isotopes to Isotopes Specialties Company should definately be stopped.

The contitions at this laboratory are sufficiently bad so that I feel we are justified in recalling the radioisotopes that Mr. Goldstein now has on hand, with the possible exception of the C 14 which is being used under marginal conditions of health safety.

Oscar M. Bizzell

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