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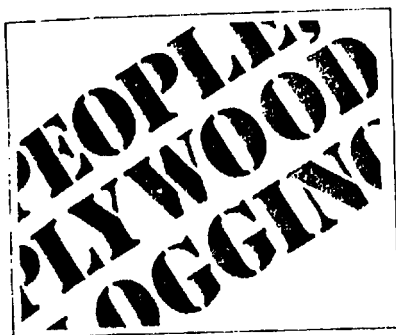
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Hidden Jeopardy For Jewelry Workers

by
Gail M. Martin

In 1794, Nehemiah Dodge established the first factory for the manufacture of costume jewelry in Providence, Rhode Island. Today, more than 70,000 workers face big safety and health problems in the manufacture of small products.

"Every Saturday our workers make up a new cleaning solution. They were emptying it into the same drain that they were later emptying the cyanide tank in. There was some hydrogen cyanide gas being produced in the room, not enough to kill anybody, but still there was some. Then they would get a headache and not put two and two together."

This incident, retold by a chemist from a large jewelry-making company, is perhaps common to all metal finishing industries. It represents the growing complexity of jewelry-making operations since Nehemiah Dodge first began production of costume jewelry by using an inexpensive alloy, and the growing number of occupational health and safety hazards facing jewelry workers.

Today 70,000 to 80,000 workers turn out products in four different segments of the jewelry-making industry: costume and precious jewelry, silverware, and findings (small unfinished jewelry parts). Daily, jewelry workers are exposed to a number of potential health hazards

similar to the hydrogen cyanide incident, because of the number of chemicals and potentially toxic substances (acids, solvents, lacquers, metal fumes, and dust) used in jewelry production. The chemical ingredients of these substances are not always revealed to jewelry workers. They are sometimes withheld by the supplier (by using trade names) or by the company as proprietary secrets.

Jewelry workers also may be exposed to a variety of safety hazards. In the face of economic disaster, the Manufacturing Jewelers and Silversmiths of America, in 1973, successfully lobbied, along with others, for the delay of implementation of the "no hands in dies" clause of the OSHA mechanical power press standards. The kind of investment necessary, they said, to comply with the "no hands in dies" regulation would have put a lot of their members out of business. Also, industry insiders report there are many machines in use in the jewelry industry for which no standards have been written.

How well the average jewelry worker is protected from these numerous health and safety



Worker operates press, where she is able to put hand in the die.

hazards is a controversial issue, one which evokes strong opinions from some industry and company officials. It is also an issue which incites community health activist groups to campaign for a better awareness of the jewelry worker's plight and for improvements in the industry.

Pinning down the industry

The great majority of jewelry factories are small operations. Of the 787 companies within the Providence, Rhode Island area (the "capital" of the costume jewelry industry), only 21 percent employ 25 workers or more, and most have 10 or fewer employees. James Hickey, industrial hygienist and acting chief of the Rhode Island Division of Occupational Health, says: "In general, the jewelry industry tends to be made up of many small companies, and they have the problems of all small businesses: lack of knowledge, lack of information, financial difficulties, high turnover of employees, and (in many cases) marginal operations. The jewelry industry seems to have its share."

Officials of the Manufacturing Jewelers and Silversmiths of America (MJSA) say their association has made efforts to educate members about worker safety and health issues and to help them comply with occupational safety and health standards. George R. Frankovich, executive director of MJSA, cites seminars on OSHA in 1974 and 1975 which featured consultants speaking on the problems of stamping, casting, and electroplating. "In the early days, we encouraged members to report, on an anonymous basis, the results of their inspections," he says. "This served as a basis for 'OSHA Hotline,' a column in our monthly magazine, the *American Jewelry Manufacturer*. It concentrated on those areas which posed the most difficulty for our members."

Yet, Frankovich maintains excessive government regulations are hampering the operations of jewelry companies. In a recent interview he stated: "OSHA has gone beyond the helpful stage and has exerted a heavier hand than conditions have seemed to warrant. This naturally has resulted in some resentment on the part of management, whose principal considerations are in operating a profitable business and in furnishing constructive employment."

Despite Frankovich's contention, statistics seem to show the opposite. Of 2,970 jewelry manufacturing companies nationwide, only 202

were inspected in the 1976 calendar year. And for an industry in which product shipment value exceeded \$2.4 billion, the average proposed penalty per company was \$90, totaling \$24,480 for the entire industry.

This association attitude extends downward to some individual members. In many companies, hostility runs high against government regulation. Even some large companies with new facilities refuse to comment on their worker safety and health programs or to allow visitors to their plants.

There are exceptions. Some companies have done much to ensure their workers' safety and health and talk freely of their efforts in occupational safety and health. Two companies which welcomed inquiry and visits to their facilities are Uncas Manufacturing Company and Bulova Watch Company.

Uncas Manufacturing Company, with about 400 employees, is one of the jewelry industry's largest ring houses. The company has been interested for a long time in worker safety and health, and has intensified its efforts in the past few years. Fred Cologiovanni, quality control and methods manager for Uncas, describes the company's commitment.

"We are very safety conscious from the president on down. I have authorization to stop production to take care of safety problems. We feel that communication is very important. Workers should know, in whatever language they speak, what is safe and unsafe." Uncas vice-president Harry Snider, adds what he thinks is an important impetus for the program. "If anything, OSHA has made employees more keenly aware. It's easier to sell our safety program now than ever before."

The Bulova Watch Company, which employs 600 workers in two plant locations, also has stepped up its safety and health program. Raymond Capron, manager of plant engineering, maintenance, and safety at Bulova, gives his estimate of the results. "Since 1974, when we initiated a more vigorous health and safety program and have had a safety officer in charge, we have made significant progress. Both the frequency and the severity of our accidents have decreased."

Machine guarding

The jewelry industry's attack on the "no hands in dies" proposal was spearheaded by an editorial in the *American Jewelry Manufacturer* of March 1973, calling for a delay in the stan-

dard's implementation. According to Frankovich, the "no hands in dies" standard "far outran the state of the art. We were operating certain kinds of machines where it was not possible to modify the machines." Some jewelry makers argued the volume and size of pieces turned out daily in the industry makes automation of these operations impossible. With backing from other industries and lobby groups, the jewelry industry's campaign prevailed. The standard was revoked on December 3, 1974.

Within the jewelry industry, there are thousands of mechanical power presses, drop hammers, and punch presses. In addition, an untold number of foot presses are still in use. Although foot presses are regarded as safe by many industry insiders, there are those who recognize their hazards. Cologiovanni of Uncas says his company hopes to eventually phase out all of its foot presses: "We hope to make the foot press as obsolete as the dinosaur."

Another problem pointed out by a jewelry industry executive is the lack of standard safety guards for certain types of machines used in jewelry-making, particularly in the watch-making industry. Much of the superior equipment used in watch-making is Swiss- or German-made. American jewelry manufacturers may purchase these machines for use, but often find it necessary to design machine guarding which complies with U.S. standards. Bulova has done this in more than one instance. Capron pointed out an automatic diamond cutting machine which is equipped with a guard custom-designed by Bulova engineers.

The marketing and use of equipment which is not in compliance with OSHA standards is not uncommon in the jewelry industry. For example, there are vapor degreasers in use in the industry which do not have the proper freeboard as specified in section 1910.94 (d)(12) (i) of the OSHA standards. That requirement reads: "In any vapor degreasing tank equipped with a condenser or vapor level thermostat, the condenser or thermostat shall keep the level of vapors below the top edge of the tank by the distance of at least equal to one-half the tank width, or at least 36 inches, whichever is shorter."

One hazard of heavy machinery is noise. With just two or three drop hammers going at once, the workplace can become very noisy. While a medium-sized company may have several drop hammers in the stamping department, a large company may have as many as 20 or 30. An administrative assistant to the president



Worker operates drop hammer press to stamp out jewelry pieces.

of a medium-sized company points out this noise affects not only the press operators but also many workers in surrounding areas, if the drop hammers are not isolated. Usually operators do not complain about the noise, she says, because they stay with her company for a short time only.

Some companies do take their safety responsibilities seriously and try to pass on this attitude to employees. At Uncas, management stresses the purpose of machine guarding. Says Fred Cologiovanni: "Safety guards cost us a lot of money to install, and are there for the safety of the employee. If workers get caught fooling around with them, they're in trouble. And if a worker removes a guard from a machine, that worker is fired." At Bulova, supervisors suspected a noise problem in the screw machine department. After consulting with acoustical specialists, the company installed absorbent panels to deaden the noise. In addition, workers are now required to wear ear protection.

Where jewelry is born

Not all jewelry is produced by stamping. Many jewelry pieces are formed by casting: die casting, lost wax casting, or rubber mold casting. Whether to cast or stamp a piece is largely a matter of convenience and economics. It also may be determined by the type of piece being formed.

During casting operations, metals are heated to high temperatures, which may generate toxic fumes. The greatest potential for worker exposure to fumes is during the pouring operations, when the worker must take a ladle full of molten metal and pour it into the casting machine with the mold intact.

These toxic metal fumes may pose a serious health hazard to the worker, especially if ventilation is insufficient. Toxic fumes can have effects on the body which are not manifested until years later. They may cause metal fume fever, an illness with flu-like symptoms (muscular pain, fever, chills, weakness, nausea, burning throat, dry cough). While metal fume fever is of a brief duration (12 to 24 hours), reports indicate that repeated attacks may do permanent damage to the lungs.

Lost wax casting, also called investment casting, is a process which is thousands of years old. A cast is made by molding plaster around a wax model of a jewelry piece. After the plaster hardens, the mold is put into a furnace, which

melts the wax, leaving an impression of the piece.

The plaster-like material of the lost wax mold contains significant amounts of silica, ranging up to 30 percent. This may present serious respiratory problems for the worker. The silica dust can become airborne when dry materials are mixed in mold-making operations. When the molds are broken up after casting, the worker may again be exposed to silica dust.

Brass and bronze (two copper alloys) are cast using the lost wax method. Since this method uses high temperatures to cast, the production of oxides is greater than with rubber mold casting. Consequently, the worker is more susceptible to metal fume fever, because the syndrome most often results from toxic exposures to copper, iron, or zinc oxides.

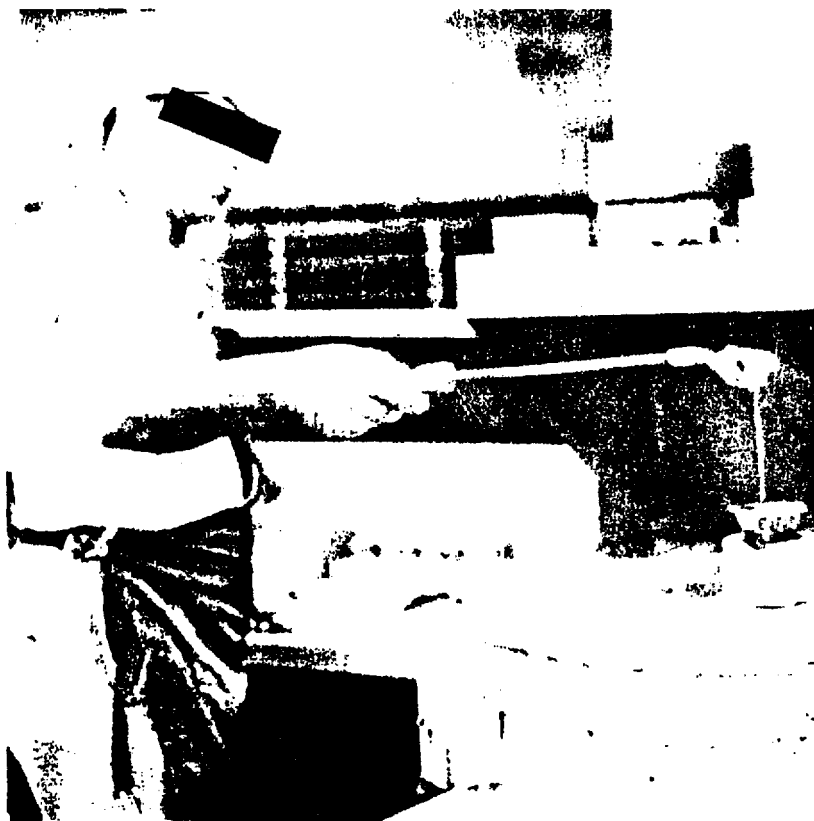
Copper alloys also may contain trace amounts of beryllium and arsenic. The inhalation of toxic fumes from these two substances may create other health problems for the worker.

The effects of inhaling toxic beryllium fumes may range from a mild inflammation of nose and throat to severe pneumonitis or chronic beryllium disease. In chronic beryllium disease, the lungs are rarely the only organs affected. Liver, spleen, heart, skin, kidneys, and bones are often involved. The onset of the condition may be delayed for a period of years after exposure. Chronic beryllium disease has been known to lead to cancer.

The inhalation of beryllium, even from settled fumes, which have been reintroduced into the atmosphere, may be very dangerous. Workers also may be exposed to beryllium through the grinding up of casts, drilling, or machine operations in the tool room.

Arsenic poisoning is characterized by a great variety of symptoms. Exposure to fumes and dust can be irritating to the nose, leading to nose bleeds and perforation of the nasal septum; and to the eyes, leading to corneal damage. Besides creating disturbances of blood, kidneys, and nervous system, arsenic contamination also can cause lung cancer.

Rubber mold casting is used chiefly for low temperature metals (400-700°F) of the costume jewelry industry. The most common metal used is white metal, which may contain large amounts of tin and lead, and smaller amounts of antimony, nickel, copper, or zinc. The potential for toxic exposure to metal fumes during melting and pouring operations is lessened by



The jewelry worker casts using the lost-wax method, but fails to use adequate personal protective equipment (goggles, face shield, gloves, and a respirator). The worker wears a head bandana to avoid getting talc dust in his hair, apparently unaware of the precautionary measures necessary to avoid inhaling talc dust which may contain asbestiform material as a component.



Rubber mold casting.

rubber mold casting, because the metals are not heated to exceptionally high temperatures. Exposure to lead oxide may occur, however, from agitation of a thin film of dross which forms at the surface of the melting pot. Inhalation of this lead oxide by workers may produce abdominal pain, headache, weakness, muscular cramps, loss of appetite, or nausea. In larger quantities, it can cause severe gastrointestinal, blood, and central nervous system disorders. Moreover, lead is a cumulative poison, and a part of even a small daily dose is not eliminated, but stored in the body.

Talc is used often in rubber mold casting operations. Before casting, the rubber molds are manually dusted to prevent the jewelry piece from sticking to the cast. The talc powder is applied generously, so the work area becomes quite dusty. This can result in significant exposure, sometimes on a daily basis, to talc, silica, and possibly asbestos, all components of many talc powders.

The final phase of the rubber mold casting operation presents one additional health danger.

After casting, the mold and cast are separated in a breakdown operation. If the molds have become contaminated with excess lead, the worker may be exposed to lead dust, which may be ingested or inhaled.

In addition to inhalation of toxic substances, there are several other hazards to which casting-room personnel may be exposed. If ladles are not preheated before use, condensation can occur. The metal molecules expand very quickly with a resultant explosion. The possibility of heat exposure and burns is very real. Dermatitis is a common affliction of casters, due to the many irritants with which they work.

Improper work habits contribute to the danger of the workplace. Workers who smoke or eat on the job, or who fail to use available washing facilities, compound the hazards associated with casting. Contact with contaminated hands, food, or cigarettes, allows toxic substances to enter the digestive tract, and eventually to spread throughout the body.

All that glitters is not good

Some of the most serious health hazards in the jewelry industry are created by the metal finishing operations: degreasing, cleaning, and electroplating. These operations make use of solvents, acids, metal salts, and cyanides.

After the jewelry piece is formed, and before it is electroplated, it must undergo mass finishing. This procedure, also called tubbing or deburring, smooths out the edges of the piece.

Much mass finishing today is accomplished with the use of automatic equipment. These machines smooth out the jewelry piece by vibration, rotation, or by some other method. When micro-switches were added to tubbing machinery, the biggest safety hazard for the worker was removed. The switch stops all motion of the equipment once the lid is opened, preventing the worker from catching fingers, hands, or arms in it.

The cleaning and degreasing operations create more serious problems. These operations utilize solvents which are known health hazards, some of them carcinogenic to animals and suspected of causing cancer in humans. The danger of these substances is that they work invisibly for years on the body of the exposed worker.

Trichloroethylene and perchloroethylene, the most common organic solvents in the jewelry industry, are noted for their effects on the cen-

tral nervous system. Affected workers may exhibit symptoms of dizziness, fatigue, headache, nausea, and loss of coordination.

Both trichloroethylene and perchloroethylene are particularly dangerous to workers who have consumed alcoholic beverages or who will consume them after leaving work where they have been exposed to these solvents. The worker exposed to trichloroethylene may experience effects ranging from mild narcosis to respiratory arrest and death. Perchloroethylene is a strong narcotic with similar effects, but has the added threat of permanent liver damage from prolonged exposure.

Industrial fatalities have resulted from exposure to high vapor concentrations of trichloroethylene. The standard for trichloroethylene requires that the worker be exposed to no more than 100 parts per million over an 8-hour time-weighted average with 200 ppm for an acceptable ceiling concentration and 300 ppm for an acceptable peak concentration, provided that exposure to this concentration occurs no more than 5 minutes in any 2 hours.

Although the industrial use of another solvent, carbon tetrachloride, has diminished since it was ascertained to be extremely dangerous, it still is in use in some jewelry shops as a degreaser and to clean molds after casting. At one company it was used in a vapor degreasing operation where workers sprayed liquid carbon tetrachloride on jewelry pieces.

Carbon tetrachloride is a potent toxin which affects the liver and causes tumors in animals. It can be fatal, since it has a tendency to replace oxygen. Its effects also are magnified by the consumption of alcohol.

In vapor degreasing, a cleaning solvent is heated by a coil and the jewelry piece is suspended in the vapors to be cleaned. The cold surface on the jewelry causes the solvent vapors to condense and flush away dirt. Jewelry is then dried by the heat of the coil.

If the degreaser is improperly located, designed, or maintained, toxic solvent exposures may result. A degreaser located close to cross drafts, dead space, exhaust systems, or open flames can cause problems. The temperature of the degreaser heating coils should not be allowed to rise sufficiently above the boiling point of the solvent to allow the vapors to rise above the condenser. If the temperature of the degreaser is not regulated properly, thermal decomposition of chlorinated solvents can occur, producing phosgene, a deadly poisonous gas.

Currently, many jewelry manufacturers are changing over to stabilized chlorinated solvents, but industrial hygienists see these alternative solutions as presenting workers with an equal, if less known, threat. James Hickey is one industrial hygienist who is extremely wary of them. He says: "Besides unknown toxic effects, these alternative solvents may have different types of toxic effects. The main example is 1-1-1 trichloroethane, also known as methyl chloroform. It has cardiac effects at high concentrations and we really don't know the cardiac implications at low levels. Also, we don't know the effects on people who have pre-existing heart conditions, or people who are on drugs like digitalis." Industrial hygienists such as Hickey favor solvents which are more susceptible to photo-oxidation by the sun (fluorinated solvents), since these are less toxic to workers.

Other cleaning materials used in degreasing operations are acids and alkalis. Alkali cleaning is done by spraying or soaking jewelry pieces in baths using ammonia or caustic soda. The heat and agitation of the bath solutions may result in the worker's exposure to alkaline mists which may be irritating to the eyes and, in severe cases, cause blindness. Also, the worker may be exposed to alkaline dust when the solutions are prepared from dry powders.

Acid cleaning (also called "bright dipping") presents problems because acids are chemically active and irritating to tissue. Some common acids used in baths are hydrofluoric, hydrochloric, sulfuric, nitric, and chromic acids. Adverse exposures to acid fumes and mists may occur, depending on the solution concentration, temperature level, agitation of the bath, and the ventilation of the fumes.

A hazard peculiar to acid cleaning is the formation of arsine gas. This occurs if a metal which contains arsenic as a contaminant (such as zinc, copper, or white metal) is treated with an acid. The arsenic reacts with the hydrogen of the acid to form the highly poisonous arsine gas. Workers exposed to arsine gas may suffer heart, brain, kidney, or liver damage. Early symptoms of exposure include severe headache, faintness, and severe digestive disturbances.

When an acid comes into contact with cyanide, hydrogen cyanide gas may result. The gas is formed when there are accidents in handling, preparation, or storage of the chemicals, or if acid and cyanide fumes are vented into a common duct. Hydrogen cyanide gas exposure

causes headaches, nausea, and (in severe cases) death.

Workers using acids for cleaning are susceptible to corrosive burns, particularly when they employ sulfuric, hydrochloric, and nitric acids. If acids are accidentally splashed in the face, they may cause ulceration of the eyes or mucous membranes. Toxic exposure to sulfuric and hydrochloric acids causes coughing or choking, when vapors irritate the mucous membranes of the nose and throat. Nitric acid is more dangerous because it does not set up a violent respiratory reflex warning in the worker like the other two.

Gilding the lily

Electroplating, the process by which various metals are deposited on a base metal, presents additional dangers to jewelry workers. It is accomplished by passing a current through an electrolyte and thereby depositing one metal on another. This process exposes the electroplater to two major dangers: burns and poisoning. Burns from hot tanks and solutions or acids may be thermal, chemical, or electrical. The heat exposure involved in the operation may result in heat exhaustion, cramps, or even heat stroke. In addition, the electroplating room presents the potential hazard of electrical shock and even electrocution.

Poisoning may occur from the inhalation of gas, or from the ingestion or skin absorption of chemicals. The particular toxic exposure depends upon the type of plating being done and upon the chemicals involved. The three major types of plating in jewelry-making are copper, nickel, and precious metal. All three present different kinds of hazards to the worker.

Copper plating may be done with acid or cyanide. Acid plating baths contain copper sulfate and sulfuric acid. The release of the sulfuric acid mist in the air can injure the worker. Irritation of the skin and mucous membranes may occur while the worker is adding salt to the plating solution. Nose and throat irritation also may occur, as well as perforation of the nasal septum.

With cyanide-copper plating, the cyanide salts—sodium cyanide and copper cyanide—are corrosive to the skin, eyes, and mucous membranes. These salts are dangerous, since contact with acid results in formation of hydrogen cyanide gas which can be absorbed through the skin as well as inhaled.

The hazards of nickel plating are somewhat less lethal than those related to copper plating.

Nickel sulfate and nickel chloride, two nickel salts which make up the nickel plating solution, are strong skin irritants. They can cause a contact dermatitis known as "nickel itch." The irritation begins in the fingers, wrists, and arms, and can spread to the neck, legs, and entire body. Also, nickel is a suspected carcinogen.

Precious metal plating presents the worker with hazards from acids and cyanides similar to those involved in copper plating. Acid-gold plating uses gold potassium cyanide which is corrosive to the skin, eyes, and mucous membranes. Both phosphoric and hydrochloric acids used in acid-gold solutions are irritating to skin and mucous membranes upon contact with the liquid or inhalation of the vapors. Silver plating uses cyanide salts, silver cyanide, and potassium cyanide. These are not only irritants, but possible asphyxiants. Rhodium plating and imitation rhodium plating present problems similar to those encountered in nickel and copper plating.

Besides acids, cyanides, and metal salts, other chemicals present hazards to electroplaters. Various "brighteners" are added to the baths to improve the luster of the metal. These include potentially toxic substances such as cobalt and selenium.

The health hazards of electroplating are somewhat alleviated by the use of automated systems such as those at Uncas and Bulova. Uncas was one of the pioneers in automatic barrel plating, and Bulova has both automatic and semi-automatic systems.

Some companies emphasize to their workers the precautions necessary in electroplating operations. At Bulova, for example, an active education program is carried on to tell workers about the chemicals and processes of electroplating. In addition, workers are required to read and to abide by the company-written booklet *Hazards in Handling Acids and Other Corrosive Materials*.

But how well workers are informed about the hazards presented by the electroplating process is a debatable question. Some industry insiders suggest that many workers engaged in electroplating operations are ill-informed about the chemicals with which they are required to work.

One quality control supervisor from a large jewelry company commented: "Most electroplaters are uninformed about what they are using. They don't know the basic chemistry of what is going on. I have platers who think that the colored solution that they are using is liquid

metal. Someone told them 5 years ago not to mix this with that and they have been operating that way ever since. Just because there are not a lot of in-house deaths doesn't mean that the workers are informed."

Contributing to the problem of ill-informed electroplating workers is the high turnover rate of workers in the jewelry industry and in electroplating operations particularly. As one worker points out: "There is a large turnover in plater's helpers. And they do all of the dirty work—the cleaning and the tubbing."

Hickey suggests this turnover, to some extent, has an impact on the type of plating supervisors working in some small shops and directing other workers. He says: "There is such a big worker turnover in the jewelry industry that sometimes the small shop may be employing a plating supervisor whose own experience is questionable."

A few further rubs

Airborne contaminants endanger jewelry workers in other industry operations as well. A common department in many shops which may have conditions posing additional health risks is the polishing and buffing department. Although polishing and buffing may be done by machine, a great deal of hand buffing still is done in the jewelry industry.

Hand polishing is done by using a polishing wheel made of canvas, muslin, or felt, and equipped with various coatings or abrasives. The type of abrasive and wheel used varies with the type of finish desired.

The speed of the polishing wheel and the worker's proximity to it are factors in his or her possible inhalation of dangerous particles. Some common abrasive compounds used in buffing are ground silica, aluminum oxide, soft silica, silicon carbide, and chromium oxide powder. The use of crystalline silica and the inhalation of finely divided silica in the free state can be particularly dangerous to the worker, since it can lead to silicosis.

In addition, the adhesives put on the polishing wheel to hold the abrasives intact may create problems. These substances may irritate the skin or eyes of the buffer or polisher.

Grinding or polishing removes more metal than buffing operations. These operations generate dust from abrasion of the worked metal and from the abrasive polishing compound. However, if the area is well ventilated and the

worker wears eye protection, polishing operations can be relatively hazard-free.

In addition the metal dust from these operations can cause dermatitis in a number of forms: skin irritations, contact dermatitis, and allergic dermatitis. Copper, tin, zinc, brass, and lead particles may irritate the skin as metal splinters.

Many jewelry workers also are exposed daily to the hazards of soldering. Soldering can bring the jewelry worker very close to the flux and solder fumes containing fluorides, cadmium, and lead. Solders may contain cadmium, copper, tin, lead, zinc, and silver. Cadmium is a particularly noxious substance. Intense exposure to its dust and fumes produces a chemical pneumonia with symptoms of chest pain, labored breathing, and edema. Repeated exposure may result in emphysema. Moreover, cadmium poisoning is progressive, continuing after actual exposure ceases.

Soldering in many jewelry shops is done on heat-resistant asbestos boards. Workers may be exposed to asbestos fibers in sanding operations which remove metal traces when production switches from a less expensive to a more precious metal. Also, many of these boards are made in-house from powdered asbestos; as a result, workers may be exposed to asbestos fiber during construction.

Jewelry workers also face health hazards in several other major operations of jewelry-making. In epoxying and gluing, workers use resins which are prepared from epichlorohydrin, a polyamine compound hardening agent. Epichlorohydrin is a strong irritant and causes asthma-like bronchospasm and coughing.

The lacquering and enameling department presents added risks for jewelry workers in the form of solvents such as methyl ethyl ketone. Some of these solvents are skin irritants as well as lung irritants. Certain jewelry companies do plastic embedments. These operations present risks to the jewelry worker similar to those of the plastic industry as a whole.

Brightening up: not just the product

There are many companies in the jewelry industry that have done much to comply with OSHA standards and make their workplaces more healthful and safer for employees. Herb Kilguss of the Rhode Island Division of Occupational Health describes these and other companies: "A lot of jewelry manufacturers have gone to great lengths to comply with OSHA standards. There are also some companies who

haven't done anything, but they will be forced to do something very shortly."

It is the workers in the companies who have not done anything who are in the greatest jeopardy. These workers themselves sometimes reach out for help. Kilguss reports that a common service of his department is responding to anonymous complaints. He says: "The majority of our visits are initiated by employee complaints. On a visit we usually take air samples, and if we ascertain that it's above allowable limits, we make recommendations."

The Rhode Island Lung Association has been instrumental in helping to organize an occupational health advisory group in that state to reach out to those workers employed by companies that are negligent in complying with OSHA standards. This advisory group has dealt with health and safety problems of the jewelry industry.

One member of this occupational health advisory committee has been involved first-hand with victims of occupational health hazards. Dr. James Valicenti, chief of pulmonary medicine at St. Joseph's Hospital in Providence, Rhode Island, has seen 21 cases of nonsmoking patients who have bronchitis. Dr. Valicenti attributes their condition directly to their employment as electroplaters. Another member of the committee has four patients with acute bronchitis directly related to adverse exposures to solvents.

One association campaigning for improvements in the jewelry industry is the Rhode Island Jewelry Workers' group. This group initially was formed by several Brown University students. Spokeswoman Margaret Quinn explains: "We know an active citizen's group had to take over where government responsibility stopped. We realized that in many cases nothing was being done to inform jewelry workers of the numerous health hazards associated with their work."

The biggest project of the group is the production of a booklet informing jewelry workers of the hazards involved in jewelry-making. There are special editions of this health and safety booklet in Portuguese and Spanish for non-English-speaking jewelry workers. Interested persons may obtain copies by writing to Jeff Young, Rhode Island Committee on Occupational Safety and Health, Box 95, Annex Station, Providence, RI 02901.

The purpose of the publication is to make

jewelry workers themselves aware of the potential dangers in their workplaces. As one industry insider claims, "Many operations of jewelry-making are inherently dangerous; the problem is informing the worker." The workers at companies who have done their part to make their shops safe and healthful have a head start; it is now time for the others to catch up.

Useful Publications for Jewelry Makers

- Health and Safety Guide for Electroplating Shops
GPO Stock No. 1733-00069 \$1.60
- Health and Safety Guide for Foundries
GPO Stock No. 1733-00123-5 \$2.35
- Health and Safety Guide for Metal Stamping Operations
GPO Stock No. 1733-00093 \$1.40
- How To Get Along With Your Solvent
GPO Stock No. 1733-00097 \$1.27
- Epoxy Wise is Health Wise
HEW Publication No. (NIOSH) 76-152
- Spray Painting—Good Practice for Employees
HEW Publication No. (NIOSH) 76-178
- Good Work Practices for Electroplaters
HEW Publication No. (NIOSH) 77-201

One free copy of any of the above may be obtained from:

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