

Chapter 2

INDUSTRY BASED HAZARDS

Despite rapid industrial and agricultural growth in much of the Third World, occupational health remains an area neglected by health professionals and governments. In industrialised societies, the company gate became the boundary for defining occupational risks and responsibilities. In recent decades it has become clear that work related illnesses and injuries have important consequences for not only the workers, but also the workers' family and general community.

- D. Christiani (1992)



Courtesy of International Labour Office

How To Use This Part Of The Book

You have arrived at the practical, do-it-yourself part of the book. The information that follows focuses on specific industries and it is hoped that the way in which information is presented will assist you to define the major areas for your action. In this section you will find a list of the major industries that employ women arranged alphabetically for easy reference. The information about each industry is presented in four subsections: major hazards; things to look for; a list of questions to ask workers; and a list of improvements to demand.

A majority of “no” responses to the questions indicated in the list of things to look for indicates that the workplace is likely to be hazardous—causing injury and disease to women working there. A majority answer of “yes” to the list of questions to ask workers indicates that the conditions at that workplace are causing some degree of injury or illness. Where companies are known to use products proven to cause cancer, the names of cancer-causing agents are also listed.

Occupational health is the practice of linking working conditions with health outcomes (injuries and diseases) that occur over a period of time. Occupational *injuries* tend to be acute events: burns, cuts, crush injuries, or falls. Most occupational *diseases*, on the other hand, take some time to develop, with the exception of acute events such as poisoning, from the intake of dangerous fumes or liquids, or burning from radiation. So if a worker complains that his or her shortness of breath is related to working in dusty environments but until then they have been employed making semiconductors that demand dust-free environments, look then for other causes for the disorder like smoking, allergy, a chemical reaction, or long-term chest infections such as TB.

The fourth sub-section lists the improvements needed in that in-

dustry to protect the health of workers. How you go about achieving those aims depends on the industrial systems in your country, the degree of interest and solidarity amongst workers, and the cultural norms that affect behaviour.

Strategies adopted to achieve work reform in various countries are found in Chapter 3. Going on strike is of course the most obvious method of drawing attention to an industrial concern, and strikes about occupational health tend to capture the public imagination. You can present journalists with the data you have collected. Stubborn corporations dislike being portrayed in the media as companies that oppose improvements in the health of workers.

How you use this book depends largely on your own role in labour. If you are an organiser for a trade union, you may want to copy the checklists and give them to women members so that they can gather information. If you read the first chapter, you may remember that occupational health and safety management demands the skills and observations of a detective. All women are natural detectives, being doubly gifted with intuition and intelligence, which they can integrate to manage their world. Think of this as the primary focus of activities: gathering evidence for a conclusive case and reform of the system. How you collect, organise and use the information is obviously up to you and the objective of the exercise, whether it be to initiate a higher degree of knowledge and vigilance in the membership or to prosecute a case against a particular firm. You may simply want to use the book to structure your observations during your factory visits to organise.

Women workers may use the book to simply run their own study circles: to study particular areas of interests, how these might apply to their workplace and work out what needs to be done to make the workplace safe. But however you use it, remember that the major issue is to collect information and put it together so that it creates a picture that can be viewed, understood by all women, and acted upon for the greatest good.

I would suggest you read broadly about other industries, as some of the pointers in those may be of value to the one you are concerned about. It may be that an issue in textile factories is just what you are worried about in furniture making and that the bells will ring when you read that part of this chapter.

Also, remember the men workers. They often have some of the worst jobs: dirty, hard and heavy. They are women's fathers, sons and husbands, so while you may be primarily concerned with women, the men could possibly use your observations and information too.

You can write notes on the spaces provided as you check off each point. There is also room at the end of each industry section for you to write any further queries you may have or other notes.

Limitations of the Book

The following list of industries in where women work is by no means exhaustive. The list of hazards and things to look for is also not complete as the technology changes all the time, and each part of the industry may differ in regard to the types of dangers and risks associated with it. The lists are simply meant to be a guide and to prompt a new way of thinking about and analysing work.

In the spirit of gaining knowledge and information, you are encouraged to recommend that management make available Material Safety Data Sheets (MSDS). This should be the first recommendation made in all industries. In fact you will find recommendations and first aid at the end of each industry listing.

Gender Differences in Work Allocation

Some of the industries listed or the questions asked may seem strange to you because in your country or province, women do not perform that particular type of work. The type of work that women do depends on both cultural and economic factors. During disasters or war, women have shown themselves to be very competent at so-called “men’s work” such as machine hammering, grinding, machine turning, and riveting—only to be returned to the kitchen when the men came home again.¹ In Indonesia and India, women perform a lot of the heavy manual labour associated with construction, which in another country might not be deemed culturally appropriate.

With economic change and the growth of export industries, women find themselves doing work that previously may only have been regarded as suitable for men. Shift work, frowned on in some cultures as being a risk to women’s morals (and not men’s, for some strange reason) usually becomes acceptable when the profits begin to flow, and the patterns of work suit the needs of the industrial patriarchy. Eventually, concern about women’s morals tends to be overtaken by the need to maximise the use of expensive machinery and other capital investments. In the battle between profit and culture, profit always wins. But later the profiteers often use culture to defend themselves against calls for work reform.

So, adapt the questions listed here to fit your country’s patterns of gender segregation of labour, and be assured that as your economic culture changes, so will the array of work that is acceptable or desirable to women.

Luckily cultures are dynamic, not static; and, like good food, are a combination of many ingredients and exotic flavours often taken from myriad sources. If cultures remained static, we, like the dinosaurs, would be extinct. It is the subtle adaptations to change that mark all of our cultural and artistic development. Unfortunately, women are often expected to be followers of this cultural change, waiting to be “allowed” to do new things rather than themselves determining and leading the direction of change. For instance, while industrialisation has meant the liberation of millions of women from the restrictions of village life and early marriage, the low wages they receive ensure that the majority still live well below the poverty line, remaining dependent on their family for occasional support. Similarly, when women in the Majority World demand their rights, they are accused of blindly following Western culture in an attempt to compel them to comply with cultural stereotypes enforced by men.

Environmental Issues

Experience indicates that lack of concern for occupational health is usually accompanied by little concern for environmental issues. Many of the industries listed here are sources of significant environmental

¹ To see just how competent women can be at so called ‘men’s work,’ see the movie *Rosie the Rivetter*, which documents the changes in women’s working lives brought about by war.

hazards. Some discharge toxic waste, some make excessive noise, and others store hazardous inflammable goods close to residential areas. Others produce noxious products that smell or cause other forms of nuisance such as attracting rats. Button making, for instance, can cause a lot of nasty smells, and attract vermin if the raw materials (bones or horns of animals or seashells) are not cleaned.

This is why in some situations it may be more strategic to alert the environmental authorities to the problem being created by troublesome enterprises. If you live close to an industrial site, your community—which is also defined as “an environment”—can also be contaminated with chemicals and wastes from nearby factories. These wastes, in addition to the substances that you are exposed to at work, can significantly affect you and your children.

Women inside a factory are covered by occupational and safety laws, which regulate dangerous substances. As soon as they leave the factory to go home, they rejoin the community and become governed by laws that manage the greater environment, despite the fact that many of the substances that manage to pollute the environment are produced *inside* the factory. In some countries, the Department of the Environment is more powerful or effective than the Department of Labour. In others, the opposite may be true. But it is important to know that if the factory produces hazardous materials, chances are they are escaping into the environment. So when considering strategies, if the Department of Labour is uncooperative, the Environment authorities may (and I mean may) be able to help. More so if you use some of the techniques at the back of the book (mapping and data collection) to show that the broader community is being affected by the stuff coming out of the factory, contaminating the air and water.

Logjams

In response to demands for workplace reforms, companies may plead poverty; that they simply cannot afford to make the required improvements. Do not be persuaded by this argument. Remember that if they have insufficient funds, they should not be in business. Within reason, workers should not have to pay with their health for management's poor economic decisions, nor subsidise the company by accepting low wages. I usually use the “car park rule” to check out if the company is doing well. Look in the car park and see what type of cars the bosses are driving. If they are posh expensive numbers like Mercedes or BMWs, then they can afford to fix things inside the factory. Remember that occupational health and safety makes good economic sense, so you need to work out a trade off (see Strategies in Chapter 3) in which all parties make gains.

The company profits from work done by the women. Enterprises cannot exist without labour, (unless they are Sci-fi factory's full of robots, but most firms in the Majority World depend on labour rather than machines, simply because labour is cheaper) while with land or entrepreneurial skills, workers can do without factories if they have to.

It is the family that inevitably pays if one of its members becomes sick or injured. In many countries, families living on an economic knife edge can be sent spiraling into poverty by the addition of one non-productive member, who needs both medical attention and food. Work-

ers' compensation, when available, rarely covers the real costs of injury, loss of skill and abilities. That is why I believe that if the bosses own fancy cars, they have enough money to improve working conditions.

Your objective as workers or as labour activists could be to ensure that the Department of Industry in your country does not license companies until they have adequate plans, policies, and facilities to ensure workers' health. If you think that increasing wages is always more important than occupational health, think again. If you are injured, you will probably become a burden to your family. Inevitably, you or your labour union members will stop receiving wages and possibly receive no compensation. Families will have to bear the cost of medical expenses, rehabilitation, and the cost of having a partially non-productive person in the household. Increasingly, women are becoming the economic heads of households, with entire groups of relatives being dependent on their wages.

We all need to evaluate what our life or health is worth. If you are willing to gamble with your health, then you need to decide for how long.

AERONAUTICS

(applies also to car manufacturing and other large metal production plants)

a

Hazards

1. Cancer from the use of fuel additives (dimethylhydrazine and beryllium), the heat sinks in brakes (beryllium), electroplating processes (cadmium), and protective, metal coatings (toluene diisocyanates).
2. Trauma from puncture or laceration wounds from sharp metal pieces.
3. Eye “flash” burns from exposure to unshielded welding zones.
4. Back injuries from lifting and carrying heavy loads.
5. Noise-induced hearing loss.
6. Slips and falls on greasy floors.
7. Various diseases from inhalation of metal fumes given off during welding; the type of disease is related to the type of welding done. Welding can produce a range of dangerous fumes depending on the metal being welded and the process used. All welding fumes should be exhausted through nearby vents to protect the health of the welder and the workers around. Sometimes welders, particularly those welding beryllium, have to wear special helmets with air lines to survive, so keep an eye out for their health as well—they probably are another woman’s husband or son.
8. Low level effects from other solvents (see Chapter 3), resins, and glues used in the process of construction. This is particularly true for thermosetting resins (those that use heat to make them set), thermoplastic resins (those that require heat to ensure they can be molded), and those working with fibre-reinforced plastics usually called fibreglass, as all have been shown to cause breathing problems and skin irritation.
9. Fire. Many of the products used are highly flammable, and the plastics used in constructing cabins, seats, and cockpits can give off deadly fumes when burnt.
10. Stress from machine-paced work, particularly in the assembly area.

What to Look For

Are all hazardous chemicals labelled appropriately and stored in appropriate and well-labelled cupboards?

Are chemicals mixed and handled in well-ventilated areas with point source ventilation (see Chapter 3)?

Is the work area kept free of waste metal, metal scrap, and other rubbish?

Is the welding bay/area well-curtained or separated from other work zones, and is it well-ventilated to prevent fumes spilling over into other work areas?

What to Ask Workers

Do all workers have a full medical examination before starting work?

Do they have regular, yearly medical check-ups? Do these medical checks comprise repeated special tests such as those designed to test breathing capacity (when you have to blow strongly into a tube attached to a meter)?

Do they experience ringing in their ears or fuzziness of hearing?

Have metal fragments injured them or anyone they know?

Do they feel dizzy, or numb, or suffer regular headaches, or feel pins and needles in their limbs?

Has anyone experienced a point of blackness in their vision as a result of catching a welding flash?

Have they been trained in the use and handling of dangerous products like dimethylhydrazine? Do they know which of the substances in the workplace may cause cancer?

Is the pace of work too fast, too slow, or just right?

Do they feel tense during or after work?

What to Recommend

Management should organise baseline medical examinations of all employees and implement annual check-ups to monitor any negative side effects of products used in the workplace. Tests should be specific to the risks at work and include tests for hearing.

Noise control strategies should be put into practice using appropriate engineering techniques. If this is not immediately possible, ear muffs or plugs should be supplied to all affected workers. If earplugs are used, they should be changed every several days.

All cancer-causing agents should be phased out in the shortest possible time. In the meantime, employees should be informed about all potential cancer-causing agents and the possible diseases that may arise from chemical usage. The use of cancer-causing agents should be minimised and only under strict control in areas where the fumes can be ventilated away. Skin contact should be avoided through the use of protective clothing such as gloves. Eyes should be covered with goggles to prevent splashes.

At a minimum, welding bays should be curtained using thick, coloured plastic sheeting. Better still, welding should be conducted in specially designed and ventilated areas. Note that production line spot welding does not tend to pose a major threat to health, as the fumes produced are minimal. However, if there are many points that require spot welding, fume build-up can occur quite quickly so those areas should be also well-ventilated.

Supervisors should guarantee good housekeeping by ensuring that pathways are cleared, oil spills are immediately cleaned up, and tools and materials safely stored. Fire extinguishers should be specific to the types of fires that may occur (electrical, chemical, or normal). All fire extinguishers should be clearly visible (see Annex 9).

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

b

BAKERIES: BREADS, CAKES AND PASTRIES

Hazards

1. Fatigue due to working hours and shift work.
2. Pests, such as rats, which may carry disease.
3. Falls on slippery or greasy floors.
4. Heat and humidity that may lead to heat stress or encourage the growth of skin fungal diseases (see Annex 3).
5. Crush injuries from dropping heavy trays, burns, and cuts and lacerations from knives.
6. Danger of carbon monoxide build-up if the ovens are old and not adequately maintained. This can cause asphyxia (suffocation) and death.
7. Dust build-up. Unless well-ventilated, the bakery can be full of flour or sugar dust that can cause runny noses and general respiratory distress. The sugar dust in the air can cause tooth decay.
8. Back injuries from carrying sacks of heavy flour and big trays.
9. Skin disorders from the use of flavouring agents such as cinnamon, fungi in flours, and benzyl peroxide (see Annex 3).

What to Ask Workers

Have you or other workers here had recent injuries? Describe what happened.

Do you suffer from a runny nose, cough or wheeze, sore eyes, bronchitis, or asthma?

Have you or other workers here been diagnosed as having lung or breathing problems like asthma?

Do you suffer from back or shoulder pains?

Have you ever suffered reddened, itchy skin in either the elbows, armpits, between your legs, or under your breasts?

What to Recommend

Ovens and other apparatus should be regularly maintained.

The floor should be regularly cleaned with an oil-removing detergent.

The premises should be ventilated using systems that do not disturb the rising process or admit contaminants from the streets.

All the moving parts of dough mixers or oven feeders should be guarded.

All hot parts of the ovens should be covered with plastered cloths (known as lagging).

Trolleys and raised pallets² should be used to carry and store flour and other ingredients.

Workers should be provided with washing facilities, including soap and individual towels.

Non-toxic pest control programs (borax mixed with flour and water for ants and cockroaches, traps for rats) should be instituted.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first



Worksafe Australia News

aid should be available on all shifts

BATIK FABRIC AND SCREEN PRINTING INDUSTRY

(The batik industry is notable for its pollution. Dyes spilled into rivers can harm people, plants, and animals down stream. See also Textile Industry)

Hazards

1. Toxic effects from dyes (some may cause cancer).
2. Burns from hot wax or heating equipment.
3. Respiratory disease from exposure to fumes and poor ventilation.
4. Eyestrain from poorly designed or inadequate lighting.
5. Back strain from poor seating or handling large amounts of heavy materials.
6. Reproductive problems, in particular reduced fertility because of the use of ethyle glycol ethers for screen printing.
7. Fire.
8. Blindness from accidental ingestion of methanol. Methanol can also lead to dermatitis.

What to Look For

Are there waterproof gloves and aprons available for workers handling dyes?

Is the dyeing procedure fully or partly mechanised, that is, using baskets or machines² agitators (mixers) to lower and mix the fabric with the dyes?

Is the lighting sufficient for workers to see their work? Is the work place well-lit? Because of the way lights are placed, are workers able to work without being in their own shadow?

Does the atmosphere look clear and free from dust and fumes?

Are working surfaces level with workers' arms and hands? Do workers have to reach long distances to apply wax or apply, pattern stamp or screen?

Do chairs and stools have back supports? Do the chairs enable the women to sit with their feet placed on the ground?

Are devices such as trolleys available to assist workers handle large bolts of fabric?

Are all inflammable chemicals stored outside in specially labelled cupboards?

Are there adequate and appropriate fire extinguishers available? Do workers know how to use them? Are there workers who smoke near cleaning fluids, thinners, and dyes?

Are all (fire) exits left unlocked during working hours in case evacuation is needed?

Is there sufficient ventilation to extract all fumes and dusts from the workplace?

Are all wax heating apparatus stable, and are the parts coated with heatproof material to prevent surface contact burns?

Is there a first aid kit available?

If methanol is used to remove the wax, is it clearly labelled as poisonous and is there any ethyl alcohol (gin or whisky will also do) around in case of accidental ingestion of methanol?

²A pallet is a wide but shallow, open wooden crate designed to be used with forklift trucks.

What to Ask Workers

Do they suffer from burning red eyes or blurred vision?

Have they ever suffered burns in their hands or feet?

Do they experience shortness of breath or chronic coughing and congestion?

Do they suffer from back pain, neck aches, or arm and shoulder pains each day?

Has anyone had bladder cancer in the work group?

Does anyone suffer dermatitis or eczema?

Have they experienced any fires in the factory?

Have any of the women experienced problems getting pregnant?

What to Recommend

All chemical dyes should be non-toxic (some of the dangerous dyes including those that cause cancer are listed in Annex 2). Use of or exposure to ethylene glycol ethers for screen printing should be reduced to a minimum. Where they are the only suitable chemical, appropriate point source ventilation should be installed (see Chapter 3).

All flammable chemicals have to be stored in metal cupboards, preferably outside the main factory premises. Cupboards should be labelled as containing flammable substances and smoking in this area should be forbidden.

Chairs should have padded backrests that support the lower back (see Ergonomics in Chapter 3).

Appropriate fire extinguishers (electrical, chemical, or normal) should be distributed throughout the premises and workers should be shown how to use them. All fire doors or exits should be left unlocked during work hours to avoid workers from being trapped if a fire breaks out.

The premises should have adequate ventilation to extract all fumes and dusts produced during work. Ventilation should be carefully placed throughout the factory to provide relief from excessive heat and to dilute potentially dangerous fumes.

Workers making designs by hand with a wax pen should be given individual (task) lights. If working with stamps, the area should be illuminated well enough so workers do not work in their own shadows, and to enable them to see the grain of the fabric clearly. Workers should be informed of the value of good lighting. Low voltage and high intensity globes will save money and reduce radiant heat.

All heating equipment, if electricity powered, should be properly wired and earthed or grounded, as there is usually a lot of water around. If the wax is wood heated, the smoke needs to be extracted. Wax containers must be stable to avoid spillage. Hot surfaces should be protected to avoid contact burns.

Women should be given protective gloves if solvents like methanol are used to remove wax residue. All containers of solvents should be well-labelled to prevent accidental swallowing, particularly by passing children.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

*Notes***BATTERY MAKING AND BATTERY RECLAMATION**

There are two types of batteries made and re-used in the developing world: the rechargeable ones like those used in cars (lead acid) and dry batteries (nickel, cadmium, or mercury). Battery recycling, while economical, is also potentially hazardous to women's health. As the degree of hazard has become unacceptable to trade unions in the developing world, the process has been exported offshore to industrialising countries where it is largely performed by casual labour. The higher temperatures in tropical nations mean that the solvents and metal fumes are more easily inhaled and are thus hazardous, particularly to pregnant women.

RECLAIMING RECHARGEABLE BATTERIES (LEAD ACID)**Hazards**

1. Burns from sulphuric acid.
2. Lead poisoning characterised by painful joints, trouble in sleeping, poor memory, and anaemia.
3. Infertility or birth defects in children of pregnant women workers (see Reproductive Rights and Health at Work in Chapter 1).
4. Back injuries from handling heavy loads.
5. Heat stress if having to work outside without shade or sufficient water.
6. Foot injuries.

What to Look For

Do workers wear respiratory protection such as cartridge respirators?

Do workers eat on or near the work site?

Is there any active effort to suppress dusts such as using water mists?

Are workers' blood lead levels regularly monitored?

Are pregnant women expected to break up the battery cases and work on recycling lead plates?

Is the work area shaded if it is outside?

Is there adequate cool, clean water available on demand?

Do women have to carry loads of battery components?

Are workers given safety footwear (strong boots or shoes with steel capped toes or, at the minimum, hardened reinforced toes) to protect their feet in case they drop the loads?

What to Ask Workers

Do you have ulcers and abrasions on your skin that have not healed?

Do you have painful joints, or have trouble sleeping? Has the doctor diagnosed high blood pressure or anaemia?

Have you or other women workers had trouble becoming pregnant?

At the end of the day, do you go home with back pain?

Does management offer you regular medical examinations?

Have you ever been offered protective clothing to wear such as heavier shoes or breathing masks (respirators)?

Is there clean water nearby to drink?

What to Recommend

Lunchrooms should be provided at a safe distance from the major work site.

Washrooms are to be provided, and all workers instructed to wash prior to eating or going home.

Cartridge respirators should be worn and cartridges regularly replaced and cleaned. The wearing of respirators should be enforced through supervision.

All attempts must be made to suppress dusts by either using water sprays or large industrial suction exhaust systems (a little like large vacuum cleaners) in areas where dust is produced. Workers living near the plant may find the dust floating into their houses and contaminating their children.

Pregnant women should be moved to other jobs for the duration of their pregnancy and breastfeeding should not be allowed in the factory grounds.

Workers are to be given regular breaks if they work outside. Water coolers should be provided.

Lifting devices and trolleys should be provided to assist women handle large numbers of batteries.

Comfortable shoes or other forms of protective footwear should be given to workers, and supervisors should insist that these be worn. Sandals should not be worn and bare feet should not be allowed.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

*Notes***NICKEL CADMIUM BATTERIES****Hazards**

1. Long term exposure to cadmium results in kidney disease, bronchitis, and lung cancer. Some breathing difficulties are found in those who inhale cadmium dusts over short periods. Cadmium also increases the risk of kidney stones. Most important to women in the developing world is the fact that cadmium has been found to increase the rate of loss of calcium from bones in those who have poor diets. Women exposed to cadmium who have a low calcium diet³ risk soft and brittle bones. There is good evidence to support the fact that kidney damage continues to occur even after the worker has stopped being in contact with cadmium.
2. Nickel often brings about skin sensitisation, a gradual process of increasingly allergic response. Nickel can also cause eye irritation, and some evidence suggests that it can cause cancer of the lungs and nose.
3. Zinc chloride is corrosive to the skin and aggravates existing cuts. If mixed with water, zinc chloride is very dangerous to the eyes.

What to Look For

Do workers routinely use breathing protection such as cartridge respirators?

Are they wearing goggles or other protective glasses?

Are they given protective barrier creams to prevent dermatitis?

Is there a place to eat at a distance from the major work area?

Are workers encouraged to thoroughly wash with soap prior to eating and going home? Does the enterprise provide soap and towels?

**What to Ask Workers**

Have you been told about the dangers of the materials you are working with?

Are you able to wash frequently?

Is there an eye wash station nearby in case of eye damage or irritation?

Do you have regular medical check-ups, with specific examinations to match the risks? (see also Chapter 3)

Does anyone suffer asthma or other allergic lung disease?

9. Risk of accidents with forklift trucks.

10. Possible cancer hazard: dichloromethane (also known as methylene chloride) used to extract hops from beer. This chemical also causes skin irritation and upper respiratory

What to Recommend

Smoking, using make-up, chewing gum, and drinking water should be prohibited in areas where cadmium is being reclaimed, or where cadmium is being placed in new batteries. Good evidence points to these products taking up cadmium suspended in the air and thus increasing the rate of absorption and total body burden in women working in these jobs.

Protective clothing should be given to prevent skin absorption of metals dissolved in solvents. Gloves, aprons, goggles, and respirators need to be used and maintained. Good ventilation is extremely important.

Annual medical checks using specific procedures to detect the effects of metal poisoning must be instituted.

Washrooms with soap and towels will reduce the risk of taking contaminants home to more vulnerable children.

Training and education should be given to workers to encourage safe working practice.

Canteens should be at some distance from the main work site to prevent accidental ingestion (entry of substance through the mouth).

Pregnant women should be employed in other parts of the plant and breastfeeding should not be allowed on site due to the risk posed by dust contaminating the women's breasts and posing inhalation hazard for the baby.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

BEVERAGES: SOFT DRINKS, BEER, BOTTLED TEA, ETC.

Hazards

1. Eye damage from exploding bottles.
2. Burns from hot pipes and steam.
3. Back, neck, and shoulder strain from poorly designed workplaces.
4. Exposure to carbon dioxide that is used to make the bubbles.
5. Exposure to alcohol.
6. Skin disorders from exposure to yeast and other fermentation products, and also from the consistent damp.
7. Falls caused by wet, slippery floors.
8. Strains from handling heavy loads.

³Calcium is found in milk and milk products such as cheese, canned fish, fish bones, bone soups and green leafy vegetables except spinach.

irritation. If held in concentrated form, it may cause skin burns. This chemical is also a mild narcotic and will cause drowsiness, headache, giddiness, and numbness. Inhalation may impair judgement and cause occupational accident.

11. Noise.

12. Accidents due to unguarded machinery, broken glass, etc.

What to Look For

Do workers wear eye protection?

Do workers have to reach above shoulder height to straighten or adjust bottles or cans?

Is the floor dry, well-drained, and regularly cleaned?

Is there adequate ventilation? Do you feel dizzy or feel your eyes watering?

Are forklift routes clearly marked?

Is there a first aid kit immediately available?

Are all pipes and steam cleaning systems guarded or lagged (covered in cloth) to prevent burns?

Are there adjustable chairs available so women could sit down?

Are there duckboards in place that provide women with raised and drained platforms upon which to stand and which bring them up to the level of the bottle lines?

Do women suffer ringing in the ears after leaving work?

What to Ask Workers

Have you ever had a bottle explode nearby or suffered an eye injury?

Do you suffer irritation of the nose and eyes, headaches, fatigue, drowsiness and/or shaky hands? These are symptoms of occupational alcohol exposure.

Do you suffer persistent back, leg, or upper limb pain?

Have you suffered burns or lacerations?

Do you know of anyone at work who has suffered cancer?

Do you experience any of the signs of poisoning with methylene chloride as listed above?

Have any of the workers fallen over and been injured?

Do you suffer any reddened itchy skin patches in damp areas such as elbows, back of knees, between the legs, and below the breasts?

What to Recommend

All women working on the line with glass bottles should be given safety glasses or goggles.

Duckboards should be provided to elevate women to a height that is most suitable for working at the conveyor lines and which provide them a well-drained surface on which to stand.

Women should be required to wear shoes to avoid cuts from broken glass.

The place should be well-ventilated to avoid fume build-up.

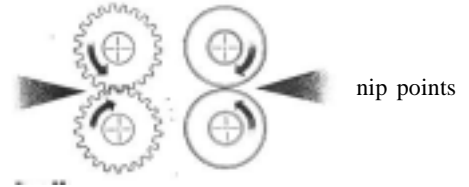
acrylic acid, or styrene are suspected to be cancer-causing agents.

The women should be given suitable washing facilities with towels and soap.

All attempts should be made to phase out the use of dichloromethane (methylene chloride).

Noise should be controlled at source where possible. However, on the bottle conveyor lines this may not be possible. Where noise levels exceed 85 dB, women should be given earmuffs or plugs.

All moving machinery “nip points” and transmissions should be guarded according to specifications.



Regular cleaning of the workplace should be done to reduce the risk of falls or cuts from broken glass.

Carbon dioxide monitors to warn of leakage should be mounted in work areas where carbon dioxide is used to aerate drinks.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

BUTTON MAKING

Hazards

1. Dermatitis due to exposure to animal and vegetable matter, dyes, and solvents such as urea formaldehyde and hydrogen peroxide. Bleaching, washing, and rinsing of raw materials may also contribute to dermatitis.
2. Hydrogen peroxide at high concentration can cause eye irritation, coughing, and throat irritation.
3. Animal-borne diseases from untreated horns, hooves, and other animal products.
4. Dust inhalation. Sources of dust may be from metal, shells, nuts, plastic polymers, and casein (made from milk by-products) that may result in upper or lower respiratory tract irritation.
5. Risk of injury from saws, punches, drills, and from unguarded machinery used in making the discs and holes.
6. Eye injuries from flying bits of sharp material such as shells that may spin off during production.
7. Solvent inhalation. Many solvents are used depending on the materials being made into buttons. Many of these, such as carbon disulphide, benzene, carbon tetrachloride, phenol,

8. Fire.
9. Noise-induced hearing loss.
10. Rapid repetitive work leading to muscular fatigue and pain.
11. Eye strain if the lighting is insufficient for fine work.

What to Look For

Are workers given regular breaks from rapid, repetitive, high concentration work?

Are all bleaching and operations that use solvents performed in enclosed tanks?

Are inflammable liquids stored outside the workplace in specially designed and sign-posted storerooms?

Is the workplace well-ventilated?

Are the doorways kept clear and fire extinguishers available?

Are machines guarded to prevent accidents? Do grinding machines have protective plates to reduce the risk of flying objects getting into the eyes?

Do women wear protective clothing such as gloves, aprons, boots, glasses, or dust masks to protect themselves from hazards?

What to Ask Workers

Do you suffer split or itchy skin, reddened patches, or wounds that won't heal?

Do you find at the end of the day that you have severe back or shoulder pains or pains in your hands or feet (if the machines use treadle mechanisms)?

Do you wheeze, cough, or feel tightness in the chest?

Have you ever suffered any strange diseases the doctors could not identify or that were related to animals?

Have you ever experienced any damage to your eyes through chemical splashes?

What to Recommend

Ventilation should be improved, and dust-producing procedures such as grinding should have specific dust nozzles to take the dust away from the workplace.

Workers should be given regular breaks so they can walk around outside to escape the hot, humid conditions. Two short breaks in the morning and in the afternoon are best. Workers doing rapid, repetitive work should be allowed to warm up and cool down at the start and at the end of the day.

Bleaching and colour impregnating/infusing processes that use solvents should be enclosed in a tank or at least be conducted in a well-ventilated area at a distance from the other work processes such as shaping, grinding, and finishing.

Solvents should be stored outside in specially designed and sign-boarded storerooms made of fire-resistant materials.

All machines should be adequately guarded to prevent hand and finger injuries, and to prevent sharp objects being dislodged and hurled across the room.

Are all hot surfaces lagged with non-asbestos insulation to reduce heat emissions and prevent burns?

Gloves should be worn if handling solvent-soaked products. Aprons and boots may be required if the job involves a lot of splashes. Goggles will prevent eye injuries while dust masks will prevent lung irritation from inhaled dusts.

Noisy machines should be confined to a single walled-off area, and the workers given hearing protection unless the machines can be made to be quieter.

All raw materials such as those made from animal parts or vegetable matter should be fumigated to eliminate possible germs and pests. The fumigation should take place at least three days before use so as to reduce the amount of residue. The fumigated material should be handled with gloved hands in a well-ventilated space.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

CAKES, BISCUITS, AND CONFECTIONERY

Hazards

1. Respiratory problems such as chronic bronchitis, cough, dryness of the throat, or tightness in the chest as a result of exposure to flour, talc, starch, and the vapours of alcohol.
2. Heat stress and burns from hot machinery; burns from candied sugar.
3. Manual handling injuries.
4. Falls and slips on greasy floors.
5. Fractures due to rolling milling machines.
6. Fire in the packing plant or if food is stuck in ovens due to conveyor failure.
7. Ergonomic hazards due to poor seating and worker-workbench fit, rapid conveyor lines, and work targets.
8. Cuts, infections, and sensitisations of the respiratory tract to spores in flour and other organic materials.
9. Toothache and cavities from continuous exposure to airborne sugar dust.
10. Allergies to nuts, cinnamon, chocolate, and cocoa beans resulting in asthma.

What to Look For

Are the floors regularly washed with detergent to remove grease?

Is clean, cool drinking water easily available to everyone?

Are all machinery with moving parts adequately guarded?

Is there an alarm that alerts staff that the conveyor has stopped? Is there an interlock system to prevent the conveyor from starting automatically while workers are working to repair it?

Does the packing area have benches that allow workers to sit comfortably without bending? Do work seats have backrests?

Are workers given regular breaks to rest, drink, and recover from manual work?

Are stairs and access ways to dough mixers and feeder systems regularly cleaned and fitted with guard rails so that women workers are not at risk of slipping and falling when working in high locations?

What to Ask Workers

Do you ever experience pain in your arms, hands, wrists, shoulders, or back? When does the pain start, and when does it go away?

Are you able to drink water whenever you need to?

Do you suffer persistent coughs, tightness in the chest, or wheezing?

Have you had an accident at work recently?

Do you suffer bad teeth or toothache?

What to Recommend

Cleanliness and safety are linked in these industries so the required standards of cleanliness to retain good healthy products are those needed to ensure safe work premises. Regular cleaning will reduce injury hazards. In particular, good sanitation and standards of personal hygiene are required from workers and management. Induction training should emphasise these points to workers.

Management needs to install readily accessible water dispensers particularly in the hotter areas.

Work on the packing line should cease each hour for three minutes so workers can exercise. All seats on the packing line should have backrests.

Lifting devices and conveyors should assist the handling of raw materials such as flour, sugar, and fats.

There should be annual dental checks at the management's expense.

Medical checks of lung function and allergic response should be conducted annually.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

*Notes***CANNING AND FOOD PRESERVING**

The types of hazards are dependent on the processes involved in the six types of food preserving activities: heating, dehydration, chemical sterilisation, radiation, use of antibiotics, and refrigeration (see Deep Freeze and Frozen Food Industry). Listed below are the general and specific hazards.

Hazards

1. Rapid, repetitive work with static postures and/or poor working postures.
2. Noise-induced hearing loss.
3. Accidents from the manual handling of heavy loads and hot containers; lacerations or amputations due to rapidly moving machine parts; slips and trips due to greasy floors, oil, water, or food residue; and cuts and injuries from metal or glass shards.
4. Burns and scalds from unprotected parts such as pipes, steam leakage, or acid and alkali (caustic soda) burns.
5. Dermatitis from frequent contact with water, detergents, and solvents. Sometimes workers become sensitised to the food products, developing a serious form of allergy that is triggered by the fruit or food they are sensitive to.
6. Diseases in the meat such as TB or anthrax may infect those handling meat. Mites in fruit or vegetables may set up an allergic reaction.
7. High levels of heat and humidity, particularly where the food needs evaporation to reduce water content, may result in fungal diseases in skin folds.
8. Radiation of food may result in leakage or radiation from enclosures.

What to Look For

Do you have to shout at the workers to be heard?

Is the place well-lit and cheerful?

Are workers well positioned, that is, can they work without raising their arms above shoulder height? Can they work sitting or standing? Is there time between work cycles to relax even briefly? Do they have regular short rest breaks?

Is the floor surface clean of debris and grease?

Is the workplace well-ventilated?

Are workers given uniforms and protective clothing such as gloves if their work involves solvents or other dermatitis-inducing substances?

Is there a suitable lunchroom at a distance from the major work area? Is there an area for women to change clothes and wash themselves prior to eating or going home?

If radiation is used, is the area clearly marked and do workers use film badges?

What to Ask Workers

Do you feel comfortable with the speed of the conveyor or food processing line? Has management responded to any requests to change the speed?

Have you ever been vaccinated against TB or other diseases (if you handle meat)?

Do you suffer from red, itchy, or split skin?

Are your elbow joints and armpits itchy, red and inflamed?

At the end of the day, do you feel exhausted with a backache or pain in your upper limbs (arms, shoulders, neck, or hands)?

Do you sometimes feel like you are taking the machines home with you because you can't get rid of the ringing or buzzing in your ears?

What to Recommend

If radiation is used to sterilise foods, the area should be clearly labelled and closed to all unauthorised personnel. No pregnant women are to be employed there if ionising sources are used. All personnel must wear film badges that should be checked usually monthly or as suggested by the national radiation authorities.

Washrooms with soap, towels, lockers, and anti-fungal talc should be provided.

Line speed should be responsive to the needs of the workers. Warm up and cool down periods should be allowed at the beginning and end of each shift.

Noise-control strategies should be in place if the factory is too noisy. All workers should be given annual audiometric examinations in addition to suitable hearing protection.

Vaccinations for specific diseases related to meat handling should be arranged based on your government's Department of Health regulations (you need to get a copy of these) and be paid for by management.

All solvents should be stored in specially marked storerooms. Material Safety Data Sheets outlining safe handling procedures for all chemicals used at the factory should be available to all workers and the recommendations followed.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

CHEMICAL INDUSTRY

Hazards

The chemical industry is vast and beyond the scope of this book to describe in detail. The hazards largely depend on what is being made in the enterprise and what raw chemicals and processes are used to create the new substances.

Chemicals fall into several categories (see also Chapter 3):

1. Solvents. Chemicals that dissolve other chemicals or into which other chemicals can be dissolved. For instance, alcohol is the solvent base for a lot of cosmetics.
2. Pesticides, herbicides, rodenticides, molluscicides, etc.
3. Pharmaceuticals.
4. Specialised industrial and laboratory chemicals, which include acids, heavy metals, polymers, and caustic agents and others.

Chemicals and their effects on the human body are discussed in Chapter 3, which also describes survey techniques that you can use if you or your co-workers suspect that risks to your health exist in your workplace.

The effects of chemicals can be very subtle. For instance, solvents can affect the nervous system and bring about changes that many of us would not think important if they happened only to us. If we become irritable and unable to sleep, we may think it is because we are worried about the children or our mother, or because our monthly period is soon to arrive. But if we find out that all our co-workers working in the varnishing section have similar experiences, we realise it has nothing to do with us personally but is a side-effect of the work we do.

The next step is to understand that this is just the first warning sign, and that if we do not do something about it the symptoms may get worse or may affect our ability to function in the community and the family. We may lose our short-term memory, so things our children ask of us may be forgotten very quickly, causing upsets and dismay among our close relatives.

The other subtle effects have to do with our reproductive function. Some chemicals are known to interfere with our menstrual cycle so we may stop menstruating, for instance. Others may stop the egg from leaving the ovum, or stop it from being lodged in the wall of the womb. While this is preventable in occupational health terms, the outcome of not preventing such things can have severe social consequences for women. In some societies, women are valued for their capacity to have children. If they are infertile due to substances that are used at work, their husbands may decide to divorce them on the grounds of infertility. Divorce and a reputation of infertility can create a huge stigma and family burden.

At the back of this book you will find a list of chemicals known to or suspected of causing cancer, and chemicals known to cause reproductive effects. Many of the strategies to restrict the health effects of those chemicals are also found under industries such as Plastics, Electronics, and Shoes.

Research done in the heavily regulated country of Sweden indicates that women working in the chemical industry tend to have children that have a lower birth weight than children born of women working in other industries. The research indicates that among the low birth weight babies, some were very small and a few died before their first birthday. A significant number of the women gave birth at least a week or two short of the average time that a baby stays inside the womb. This early birth increased the risks of the new baby being underweight. The researchers concluded that if such a situation exists in a country such as

Sweden with very tight and well enforced laws, then the number of such cases will be higher in developing countries.⁴

What to Look For

The major things to look for are:

Is the enterprise well-ventilated? In the chemical industry and in the pharmaceutical industry, some very toxic agents should be handled in special ventilated cupboards known as fume cupboards. Some may have to be handled by remote control through gloves that protrude into the special handling room.

Are the workers trained and given full information about the special handling procedures for each chemical? This information should also be posted on the wall to remind workers.

Are special clothing issued to the workers, in particular face shields, respirators, gloves, and aprons? Do they fit well and are they comfortable?

Are all chemicals stored in specialised areas that are clearly marked with either HAZCHEM or International Hazard Signs? All flammables should be stored outside, as should explosive materials. Acids and alkalis should be stored separately.

Are all chemicals manually carried or are there lifting and carrying trolleys that reduce the risk of spills?

Is there a policy of cleanliness in place? Are all spills instantly cleaned up with compatible cleansers or absorbent materials?

Does management regularly monitor the air to see if chemical fumes are escaping?

Are there fire precautions in places such as fire evacuation practice, sprinkler systems, and appropriate fire extinguishers (electrical, chemical, or normal)?

Do workers know what to do if there is a chemical spill and other such emergencies?

What to Ask Workers

Did you have a complete medical examination before starting this job? Do you have regular (annual) medical tests? Are you told the results of these tests?

Were you trained in the safe use of chemicals you routinely handle?

Do you know about the risks to health of all the substances in your workplace?

Do you feel confident that management keeps you informed of the concentration of fumes, or if the chemicals in the air exceed the recommended limits?

Do you regularly feel ill? Describe how you feel.

Have you had any trouble having children? Do you know any other co-worker who has? How many workers have had the same problem? Have other workers experienced other types of problems with pregnancy?

Do you know of anyone who had fallen very ill after working here? If yes, what was the problem? How many people had fallen ill?

Are you regularly issued with appropriate protective clothing? Do you get replacements when anything is damaged?

Do you know how to maintain the clothing or equipment?

Is the clothing comfortable? What happens if you don't wear it?

What to Recommend

All recommendations made by Material Safety Data Sheets (MSDS) about specific chemicals should be followed.

All new workers should be medically tested to establish baseline medical data.

Workers should be given protective clothing and equipment only after consultation with the workers.

Great attention should be paid to ventilation systems. The workplace should be regularly (daily) monitored with Draeger (reagent) tubes, personal, or static monitors to ensure that the ventilation systems are working well.

Regular fire drills and maintenance of fire equipment should be instituted.

A rigorous program to prevent smoking within the workplace should be introduced to reduce the risk of fire or explosion.

Workers should be promoted in accordance to skill and experience in order to motivate them to follow safe working practice.

Management should institute a program to monitor all pregnant women to check outcomes of pregnancy. Any pregnant woman who wants to change jobs should be able to do so without compromising her job or wage.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

CHILI GRINDERS AND WORKERS

(applies also to other spices)

Hazards

1. Breathing problems with coughing, sneezing, and runny nose that lessen as time goes on.
2. Lacerations or amputations due to poor machine design or lack of guards.
3. Noise from machinery.
4. Sensitisation and irritation of the eyes.

What to Look For

Is the workplace well-ventilated?

Do workers wear dust masks and gloves?

Are the grinding machines guarded to prevent fingers or hands from getting into the

machines while these are in operation?

Is the noise level in the workplace excessive?

What to Ask Workers

Do you suffer from wheezing, coughing, runny nose, or eye irritation?

Is there a place to wash with soap and towels provided by management?

Has anyone had a serious accident in the place?

Do you have ringing or buzzing in your ears at the end of the day? Do you have to shout for co-workers to hear you at work?

What to Recommend

Workers should be given dust masks (dense paper and not fabric) and the place should be well-ventilated to reduce the concentration of chili dust.

Washrooms with soap and towels should be provided so workers can wash up before going home.

Cotton gloves should be given to workers so they don't become "burned" by the oil in chilies, or transfer the chili to their eyes or other sensitive places.

All machines should be guarded to reduce the risk of hands or fingers entering while the grinders are in operation.

Institute a program of noise control through rubber gaskets between the floor and the machine, or by maintenance. Provide workers with ear protection.

If workers experience breathing difficulties and chronic cough, they should be examined and treated at the management's expense.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

CLOTHING INDUSTRY

Hazards

1. Ergonomic hazards: long periods of sitting on poor seats with no back support, resulting in back pain and spinal deformities in young adults or children. (see Chapter 3, Ergonomics section)
2. Poor lighting.
3. Respiratory problems such as byssinosis⁵ resulting from inhalation of dusts.

⁴This research should make it even more important for women in the Majority World to perform their own workplace research. If the findings look to be significant (or you are not sure if they are), women could think of establishing a collaborative relationship with a local university or NGO.

4. Long working hours.
5. Fire, particularly if the factory is crammed with fabrics, and exits are illegally locked to prevent workers from leaving the premises. Unauthorised people can enter the premises.
6. Crowded conditions enhance the chance of spread of infections such as TB.
7. Use of solvents for bonding, cleaning, and sizing, in particular formaldehyde and trichlorethylene.

What to Look For

Do all seats have backrests (preferably adjustable), especially those for young and pregnant workers?

Is there enough room between workers to enable relaxed sitting without fear of injury from the machines or being too close to other workers around?

Is the factory well-ventilated and lit? Is the room cool or are there fans to move the air around?

Are women permitted to go to the toilet without being penalised?

Is the floor space uncluttered by waste and are the fire doors unlocked and easily accessible?

Are there appropriate extinguishers available and are they well-maintained?

If longer shifts are required, are workers granted at least a one-hour break at the end of the normal shift before commencing overtime or shift work? Is there a meal available during that period?

Is the lighting sufficient and designed so that workers do not have to sit in their own shadow or lean to the side or front to see?

What to Ask Workers

Do you experience back pain? Does it get better during the night, or does it continue the next day?

What is the length of the normal working day? How often are you required to work overtime?

Do you suffer from sore or dry eyes?

Do you suffer from irritated throat, shortness of breath or other breathing difficulties, or skin inflammation (these are signs of solvent inhalation and sensitivity)?

What to Recommend

All chairs must have backrests and seat cushions: this should be mandatory in the clothing industry.

There should be at least 2.5 square meters of space around each worker to enable storage of waste materials, tools, and completed garments and to prevent the transmission of disease, and to allow easy escape in case of fire and other emergencies.

At the very least, meals should be provided after eight hours of work, with a paid break of at least one hour before any overtime work.

Ventilation should be upgraded to the point where sufficient dispersal of vapours occurs to

prevent sensitisation (long-term gradual allergic reaction). Toxic products such as trichlorethylene should be avoided for spot cleaning. If it is retained, the work should be done in front of an open window,

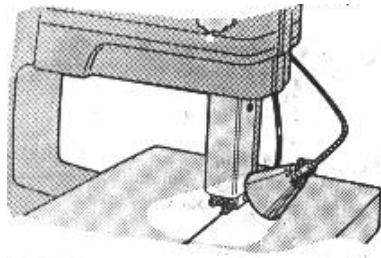
preferably with a fan beside the worker to remove the fumes.

Lighting needs to be sufficient to enable workers to complete the tasks without eye irritation. Task lighting is preferable.

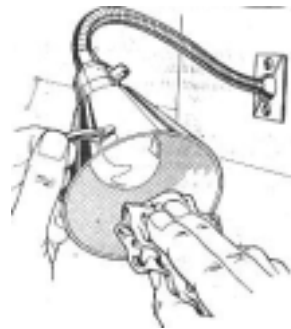
Workers should have regular medical check-ups for lung and eye disorders.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.



Task lighting



Clean fittings to maintain efficiency

Notes

COFFEE INDUSTRY

Hazards

1. Burns from the roasting apparatus.
2. Manual handling of heavy bags of coffee, resulting in back injuries.
3. Some workers experience sensitisation (an advanced form of allergy where the body reacts to even tiny amounts of the material) to the dust and materials associated with green coffee.
4. Injuries from coffee grinders.
5. Heat stress and dehydration.
6. Noise-induced hearing loss.
7. Allergies to green coffee, which reveal themselves in runny noses, watery eyes, shortness of breath, skin eruptions, and headaches.

8. Fire and explosion as large amounts of fuel for roasting the coffee are needed to be stored on site.
9. Exposure to dichloromethane (methylene chloride) which is thought to cause cancer. This is used to make decaffeinated coffee and has a narcotic reaction (see Beverages).

What to Look For

Does the company safely stack the bags of coffee, ensuring that stacks do not go beyond five bags high?

Does the company use trolleys or passive conveyors to enable easy transport of coffee bags? Is the entry to the roaster at the same height as the trolley or conveyor, or does the coffee have to be manually emptied into the roaster?

Are all hot surfaces properly insulated with non-hazardous (i.e., not asbestos) materials such as thick plastered bindings of kapok?

Is the enterprise adequately ventilated to allow heat and dust to disperse?

Is it difficult to talk to workers without shouting?

Are all grinding machines adequately guarded to prevent unwitting injuries?

Are the fuels stored at a safe distance from the main factory? Are the areas labelled with fire hazard signs and is smoking prohibited?

Is cool, clean drinking water easily available to the women?

What to Ask Workers

Do you regularly experience runny nose, watery eyes, shortness of breath, or difficulty in breathing, skin eruptions, or headaches? Is there a pattern to these complaints—do you get better during weekends or holidays?

Do you have backache?

Do you have ringing in the ears or fuzziness at the end of the day?

What to Recommend

If workers are showing signs of sensitisation, the ventilation is inadequate. Workers may have to be medically examined and transferred to other jobs.

Workers should be equipped with hearing protection and supervised to ensure that they wear them. An education program to warn workers about noise-induced hearing loss is recommended. Annual audiometric testing should be carried out if noise levels are excessive.

All machines that have chain drives, fly wheels, or other moving parts that may injure workers should be guarded according to specifications from the Department of Labour. Workers should not be able to put their hands inside a grinder when the machine is operating.

Management should purchase equipment to facilitate easier handling of raw materials, if these equipment are not yet available. Pallets for forklifts and the installation of passive conveyors will reduce injury rates.

Clean drinking water must be made available when needed.

Workers need to be checked annually for signs of green coffee allergy.

⁵Byssinosis refers to a specific condition that affects workers who handle natural fibres such as hemp, flax, or cotton. It is an allergic reaction to the microscopic fungi that live in the fibres. It is characterised by tightening of the chest, wheezing, and coughing early in the working week that eases off towards the end of the week, disappearing altogether during weekend or other days off. This pattern indicates it is an allergy, and not workers faking the illness.

Large carbon dioxide fire extinguishers should be kept at strategic points around the factory. Pilot flames or other protective devices should reduce risk of fire by reducing explosive gases.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

CONDOM MANUFACTURING

(also applies to other latex products: gloves and medical items)

Hazards

1. Sensitisation after long-term exposure to latex or the lycopodium or cornstarch used in packets. Symptoms include asthma, runny nose, shortness of breath, and shock reactions, but mainly reddening, itchy patches on the skin known sometimes as “hives.”
2. Poor working postures causing back and shoulder pain.
3. Eye and skin irritation if formaldehyde is used in the making of latex.
4. Breathing problems as a result of allergies to talc.

What to Ask Workers

Have any of you suffered any of the symptoms mentioned above?

Do you have regular tests for allergies?

Do you suffer from back and shoulder pains?

Do you suffer from eye irritation and reddening, or skin eruptions that itch?

What to Recommend

As the degree of sensitisation to latex can be life threatening, it is important that any worker displaying signs as those above—runny nose, shortness of breath, and skin reddening and itching—be patch tested by an allergist and transferred to another job.

Chairs need to have backrests and allow women’s feet to touch the ground. Work should be designed to enable it to be done while sitting or standing.

Sufficient ventilation (Chapter 3) of the workplace has to be provided to prevent formaldehyde fumes and airborne talc dust build-up.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly

used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

COSMETICS AND PERFUMES

Cosmetics and perfumes refer to the manufacture of lotions, skin preparations, colours, nail preparations, shampoos, oils, deodorants, etc. Perfumes are natural organic materials or synthetic agents used to give nice smells in concentrated or diluted form. Many cancer-causing agents are used in the cosmetics industry. See the list of cancer-causing agents in Annex 2.

Hazards

1. Sensitisation to colouring agents used in cosmetics and some perfumes, causing respiratory irritation and reduced resistance to respiratory tract infections and bronchial asthma.
2. Fire hazards from volatile solvents and aromatic liquids.
3. Dermatitis from allergic reactions to perfumes and solvents. In addition, eczema and a reddening and itching of the skin, sometimes called hives, are also the result of sensitivity to perfumes and other cosmetic products.
4. Systemic poisoning risks (meaning it affects the whole body and not just a local area) from substances such as benzene, acetone, toluene, or dichloromethane. Many of these are also thought to cause cancer: acetaldehyde, o benzo p chlorophenol, carbon tetrachloride, dimethyl sulphate, 1,4 dioxane, epichlorhydrin, ethyl acrylate, ethyl carbamate, 1,2 propylene oxide.
5. Very rarely, some workers react to the diamines in cosmetics by developing a disease called lupus erythematosus.⁶
6. Some companies put lead dust in cosmetic powders and lipsticks, a risk for consumers as well as the lead is absorbed through the skin and mouth (lipstick).
7. There seems to be some evidence that cosmetic and perfume workers have an increased risk of heart disease and rectal cancer (the rectum is the point at which waste leaves the body—also known as the anus).

What to Look For

Is the workplace effectively ventilated with mechanical ventilation over all mixing and production areas?

Is benzene being used? Are pregnant women using benzene?

Does the enterprise have sufficient fire and explosion control mechanisms in place?

Appropriate storage of flammable liquids.

If ethereal oils (those made from plants, including turpentine oils) are used, care should be taken to limit exposure, as these can be nervous system depressants. All containers with volatile (quickly evaporating) oils and solvents should have lids or other systems of closure. Large amounts should not be stored in the workplace.

Protective clothing such as gloves and well-fitting respirators (not gauze masks) must be used if there is a problem with irritant dusts.

Pregnant women should not be working with ethers or solvents without adequate protection and ventilation.

What to Ask Workers

Do you have problems with breathing, coughing, or wheezing when at work?

Have you had any problems with your skin since you started working here?

Do you have regular blood screening?

Do you know anyone who has developed cancer or blood disease while or after working here?

What to Recommend

If benzene is used as a solvent for oils and perfumes, it should be phased out in favour of less toxic products such as petroleum ethers (which are also dangerous but do not have the blood damaging properties of benzene). While benzene is used, workers must take care and use full respiratory protection and gloves.

The workplace should be well-ventilated and cooled to prevent the evaporation of oils and solvents, and thus reduce airborne contamination levels.

Workers should be given yearly medical check-ups that include attention to skin, blood, heart, and lung function.

Pregnant women should not be employed in areas where benzene is used. Benzene should also be phased out in favour of less dangerous solvents.

All solvents and aromatics should be kept in lidded or sealable containers.

Regular fire drills should be held, and women shown how to use fire extinguishers.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

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DEEP FREEZE AND FROZEN FOOD INDUSTRY*(see also Canning and Food Preserving)***Hazards**

1. Menstrual disorders from exposure to cold.
2. Falls and slips on wet or icy floors.
3. Electrical hazards.
4. Leaking refrigerants such as ammonia, methyl chloride, and halogenated aliphatic hydrocarbons can be explosive hazards, poisonous, or cause chemical burns. Freon, the chemical most commonly used in modern plants to cool the air, displaces oxygen. (If freon leaks, it pushes the oxygen out of the air, making it hard to breathe.)
5. Cold, particularly if there are fans circulating or blowing cold air, increasing the wind chill factor. (Wind chill rapidly increases the rate at which bodies lose heat. Watch for sleepiness or clumsiness which can indicate that women are succumbing to the cold, or are being deprived of oxygen to leaking freon.)
6. Hazards caused while preparing the food for freezing like cuts, perforations of the skin, etc.
7. Cuts that result from lack of dexterity as joints stiffen up because of the cold temperature.

What to Look For

Can you smell ammonia from the refrigeration plant?

Are there cleaners employed to regularly sweep water from the floor?

Are women (and male) workers given sufficient warm clothes to work in the cold? Do they receive gloves, socks, boots, coats, jumpers, and garments to keep them from getting wet?

Are there any exposed wires or cables lying on the floor?

How long are workers required to work in the cold before taking a rest break?

Note if all freezer doors can be unlocked from the inside, and auditory and visual alarms are installed in case of an accident inside.

As cold room and preparation area floors tend to be covered in tiles or concrete for easy cleaning, standing for long periods is very tiring, particularly during pregnancy and menstruation. Make sure seats are available and usable for postural relief.

Floors require adequate drainage to carry away water and debris.

Is the food (provided at work or from the home) adequate for the increased energy consumption needs of workers in the cold?

Are the parts of the refrigeration plant regularly checked and maintained to prevent leakage of gas?

What to Ask Workers

Do you experience any discomfort with your periods? When did this start?

Have you experienced any painful itching in the feet and/or hands? These are signs of circulatory disturbance.

When you leave the freezer room after being there for half an hour or more, are you able to warm up, for example have hot drinks and sit or stand somewhere warm?

Are there times when you can smell ammonia or strange aromatic (sweet or pungent) smells? Is there any change in how you feel when the smell comes? For instance, does it sometimes feel hard to breathe? Does the ammonia irritate your eyes?

Has anyone been trapped inside the cold room since you have been working here?

When you are working in the cold room, are you warm enough? If not, where in your body do you feel the cold? This may indicate that a particular piece of warm clothing is insufficient.

What to Recommend

Management must make sure that the resident engineer regularly inspects all refrigeration plants. Doing this reduces replacement cost of refrigerants, which saves money, so management should support this action.

Management must supply all workers with correct and sufficient clothing.

Jobs that are static, that is, jobs that do not require physical effort, are those in which workers will feel the most cold as they are not generating much body heat. Ensure that workers doing static jobs, such as packing inside the cold room, are rotated every half to one hour with workers from the main floor. This is particularly important for menstruating women, as cold is known to aggravate pain and discomfort.

Management should ensure that all workers are adequately trained and that all tools such as knives and staple guns are well-maintained to prevent accidents.

Floors must be regularly swept with a rubber blade (squeegee) to get rid of excess water that can freeze, thereby increasing the risk of falls.

Flashing red light outside the cold room must be adequate so workers can see any hazard on the floor and be able to clearly see the work they are expected to do.

If not already present, both noise and light alarms should be fitted outside of the cold room door, in case someone is trapped inside.

Workers from the cold room must be given access to warm drinks and regular rest periods to regain warmth. For those doing work requiring manual dexterity, e.g. tying knots or arranging food in trays or boxes, regular re-warming of the hands may be the only solution to the pain and clumsiness induced by the cold. Immersing hands regularly in warm (not hot) water is the optimum method.

In the food industry in general, management needs to be reminded that good ergonomic conditions, that is, good lighting, seating, and reasonable line speeds with regular rest breaks are required to ensure worker health and well-being. Healthy workers are more productive.

Warm-up and cool-down times are required to allow workers to adjust to the cold.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

DRY CLEANING

Hazards

1. Increased rates of cancer of the bladder, oesophagus (tube leading from mouth to stomach), bowels, and pancreas related to exposure to dry cleaning solvents (carbon tetrachloride, benzene, tetrachloethylene, and 1, 2 dichlorethane). There is also evidence that cancer of the cervix and urinary tract is related to dry cleaning work. The risk of contracting cancer seems to increase if a woman has worked in the plant for 10 years or more.
2. Steam burns and burns from irons.
3. Dermatitis from use of dry cleaning chemicals, such as carbon tetrachloride, perchloroethylene, and trichlorethylene, and petroleum solvents (known as Stoddard's Solution).
4. Ear, nose, and throat irritation and burns to the eye from exposure to trichlorethylene. Long-term exposure to this chemical can lead to neurological damage with dizziness, trouble in balancing, fatigue, nausea, vomiting, blurred vision, and tremors (shaky hands).
5. Exposure to carbon disulphide. Splashes can cause skin burns. Repeated skin absorption of carbon disulphide has been known to result in menstrual disorders (menstruation ceasing or becoming quite painful) and psychological, neurological, and cardiovascular illnesses. Women exposed over the long term to carbon disulphide can become quite mentally distressed, with rapid and profound mood changes, defective memory, inability to sleep, and attacks of rage. In extreme cases, women have been known to feel suicidal. In addition, carbon disulphide is associated with heart disease and stomach complaints.
6. Fire risk from inflammable solvents and the risk of poisonous fumes from protective plastic coverings for clothing.
7. Humidity and heat stress; dehydration.

What to Look For

Is the workplace well-ventilated with exhaust fans placed strategically close to major sources of chemical fumes?

Are all the major sources of chemicals and solvents kept tightly closed when not in use? Are they stored outside in a specially designed cupboard or storeroom?

Are there sufficient fire extinguishers and are all fire exits left unlocked? (Sufficient fire extinguishers mean that in case of fire, a worker does not need to go further than 25 meters to find an extinguisher.

Are there sufficient warning signs prohibiting smoking?

Are workers given suitable protective clothing, such as gloves and aprons, if they are transferring garments by hand from solvent baths to machine dryers?

Is there an emergency shower or eye wash station available in case of spills or splashes to the eyes?

Is there ample cool, clean water available for drinking?

What to Ask Workers

Do you sometimes feel giddy, have headaches, sore eyes, or runny nose?

Do you suffer rashes or itchy skin?

⁶This is also known as connective tissue disease and is poorly understood. It is thought to be a collection of diseases brought about by the body's own allergic reaction to itself. Some lupus are mild and only affect the connective tissue of the skin, creating white itchy patches that get worse with contact or exposure to sunlight. Others involve a deterioration of the connective tissue that holds the body together. In more severe cases, the lungs and kidneys may be involved. The disease is slowly progressive and may shorten life. It can be treated with medicines known as corticosteroids.

Have you been concerned about your own or your co-workers' behaviour at work?

Are there certain chemicals that make you feel very unwell? What are their names?

Do you have regular medical check-ups paid for by management?

What to Recommend

The ventilation in the plant should be improved to disperse the fumes, and the ventilation systems should have filters (known as scrubbers) to reduce the level of environmental contamination.

Particularly dangerous chemicals, such as carbon disulphide, should be phased out and replaced by less toxic materials.

Annual medical checks at the management's expense should be given to all workers, with emphasis on looking for early signs of cancer.

Emergency showers, washing facilities, and eye wash stations should be installed near areas where solvents are handled.

A source of clean, cool water for drinking should be easily available.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

DYEING

Dyes are complex chemical substances, the composition of which is changing with new demands for colour and wearability. Many of the new generation dyes are safer than those traditionally used in batik making or in small holder dye works for making things like dishcloths and clothes for the domestic market. Knowing if a dye is safe or not involves a lot of chemical investigation. You may need to have a friend in the warehouse who can give you the chemical names and composition of the dyes

Hazards

1. Occupational cancer, particularly cancer of the bladder from use of 2-naphthylamine, benzidine, azo compounds, and diaminine-based dyes. In addition rhodamine B and magenta have been found to cause cancer. Other dyes are currently under review for cancer-causing actions.
2. Burns from hot pipes, steam, or water and chemical burns from the use of hydrochloric and sulphuric acids. Caustic soda burns are also a possibility. Eyes are at particular risk of caustic burns.

3. Back injuries from handling wet heavy fabrics.
4. Dermatitis from acids and alkali bleaches, detergents, solvents, and continuous wetness of hands and feet. Dyes are also skin irritants and using abrasives or alkalis to remove the colour from the skin sometimes makes things worse to affected workers.
5. Skin, eye, and lung irritation from exposure to chlorine or hypochlorite fumes. If these are inhaled in large quantities, water can fill up the lungs, the worker will have enormous difficulty breathing, and in severe cases may die. Workers should be moved outside immediately if they show signs of distress.
6. Heat stress.
7. Eye damage if methyl alcohol used in dyes is accidentally swallowed.⁷ This may cause dizziness and headache. Formic acid used in wool dyes also causes watery eyes and runny nose. Cough and throat irritation may also be caused by formic acid exposure.
8. Corrosion of the wet surfaces of the mouth and throat, eyes, and skin by bleaching agents, especially chlorinated lime and other chlorine-based products.
9. Fires and explosions.
10. Nerve damage from solvents such as methyl butone ketone.
11. Allergies to cotton dusts (byssinosis-like symptoms).
12. Mechanical injuries due to fingers caught in rollers or wringers.

What to Look For

Are the workers expected to handle the wet fabrics by hand?

Are the dyes being used based on the following chemicals: benzidine, azo compounds, 2-naphthylamine? These are the ones that have been linked with cancer.

Are workers protected from splashes and skin absorption of potentially dangerous dyes? Is the process totally mechanised? Do workers wear waterproof clothing and gloves?

Is the place cooled to prevent heat stress?

Are the floors well-drained to prevent slips and falls?

Are workers given sufficient rest times to recuperate from heavy and hot work?

Are there showers and other washing facilities available for workers?

Are all bleaching processes performed in sealed tanks? Can you smell strong chlorine fumes? (smells like bleach/Bayclean)

Are tanks containing caustic soda sealed, and are workers prohibited from getting close to them unless they have appropriate protective clothing (goggles, aprons, and gloves)?

What to Ask Workers

Do you know of any worker here who have been diagnosed as having cancer?

Have any of you suffered back injuries?

Have any of you suffered burns?

How many of you have dermatitis or any other skin problems?

Do you have regular medical check-ups paid for by management?

Are there washing facilities to enable you to wash and change clothes at any time of the

⁷This may be a problem for young male workers who think that they can get drunk on methyl alcohol. Drinking it in quantity will cause blindness and possibly kidney failure. The major antidote (remedy) is to administer ethyl alcohol. Drinking whisky, gin, brandy, or any other spirits will also neutralise the methyl alcohol. (So, young men might get their way after all!)

day?

Is there an eye wash station close by in case chemicals splash into your eyes?

Have you been trained in safe working methods with these chemicals? Do you know the dangers of the chemicals you are working with?

What to Recommend

All bleaching procedures should occur in a closed vat or tank. A fully-trained operator should monitor the process and raise the alarm if chlorine or hypochlorite leaks occur.

Any dyestuffs containing cancer-causing chemicals should be replaced by less dangerous substitutes.

All workers in the dye plant should have regular medical checks, focusing on their bladder and urinary tract.

All workers working with dyes or bleaching chemicals should wear steam-proof goggles, resistant gloves, and aprons to prevent splash burns.

Floors should be well-drained and cleaning staff hired to regularly mop the floors to free them of detergents.

Dipping and mixing processes should be mechanised, even by the use of simple chain-driven wire baskets or roller systems, rather than being dependent on human hands coming into frequent contact with dyes.

All nip points, rollers, and moving parts should be guarded to prevent injury.

Workers should be given a wash room with appropriate detergents to clean off dyes, as well as towels and barrier- and lanolin-based creams to restore skin elasticity. There should be lockers provided to store clothes and spare overalls.

All hot pipes and surfaces should be insulated.

Solvents should be stored in properly designed storerooms constructed of fire resistant materials, and have a sill (raised lip) doorway to prevent the leakage of spilled solvents. If large quantities are stored, the area surrounding the storeroom should have a raised earth wall around it to prevent large-scale fires from spreading. The list of the solvents should be listed on a signboard so that emergency service personnel know what they are dealing with in case of fire.

Management should supply a large number of light overalls to the women which can be rapidly changed if their clothes become wet from chemicals.

Emergency drench showers and eye wash stations should be provided.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

ELECTRONICS, MICROELECTRONICS, AND SEMICONDUCTORS



Hazards

1. Low-level poisoning from toxic chemicals such as cleaning agents.
2. Cancer. For instance, soldering workers have a higher than average rate of melanoma (a very deadly form of skin cancer). Other chemicals used that are known to cause cancer are acrylonitrile, (hexachloro) benzene and benzidine, cadmium oxide and its compounds, chromic acid, chromates, nickel, ultraviolet light, radio isotopes, X-rays, vinyl chloride, and dichloroemethane.
3. Radiation from ultraviolet rays, X-rays, radio frequency, microwaves, infrared, and lasers. Radiation—for instance, ultraviolet—can combine with some of the chemicals used for electronics to form poisonous gases that build up in the work place.
4. Allergies and irritation caused by chemicals.
5. Eye strain, eye irritation, and eye damage.
6. Reproductive hazards, in particular, miscarriage.
7. Noise-induced hearing loss.
8. Stress.
9. Shift work and fatigue.
10. Some have complained of social stress in the semiconductor industry resulting from being totally covered in protective clothing at work, which leads to a sense of anonymity and alienation.

What to Look For

Refer to Annex 2 for the list of chemicals known to cause cancer and reproductive problems in the electronics industry. Check with the workers to see if these are routinely used in their workplaces.

Are women multi-skilled to enable them to change their task and avoid eye strain or muscle strain injuries?

Is the speed at which the work goes by controlled or influenced by the women?

Is the lighting sufficient? That is, is it bright enough to see without peering, and is the light designed so women do not work in their own shadows?

Are all stored solvents well-sealed?

Are all tools, such as soldering irons, well-stowed to avoid burns or falls from the bench?

Are women who use microscopes given regular breaks to allow them to rest their eyes? Is there a window that allows them to look into the distance or wall poster available with a landscape scene that gives an illusion of distance? (This is the best way to rest the eyes).

Do fumes or dust contaminate the air? (To the one doing the inspection: Do your own eyes react to the conditions?)

Is the air sufficiently humidified as well as air-conditioned to reduce the degree to which women's eyes dry out at work?

Are all radiation sources well-marked and shielded to prevent leakage or prevent workers from getting close enough to be affected? Is there a specially trained radiation control

officer on site? Do workers in areas using radiation sources wear film badges (see drawing) and are the badges regularly taken away for analysis and the results given to the workers?

Are workers given protective clothing such as goggles, gloves, and aprons when handling chemicals such as solvents?

What to Ask Workers

Do you suffer from redness, watery, or sore eyes? Do you sometimes have trouble focusing? Have you needed to get glasses since beginning work here?

Do you suffer from scaly or itchy hands?

Do you sometimes feel short of breath, or have a cough when you use certain chemicals or perform certain processes?

Have you had problems with reproduction such as infertility or menstrual problems, or do you know other women co-workers who have experienced these things?

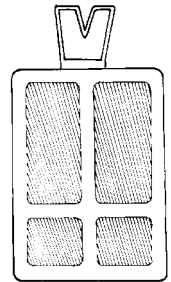
Have any of the soldering workers been diagnosed as having skin cancer? Have you heard of other workers getting cancer after they stopped working at this factory?

Do you experience ringing or buzzing in the ears after you leave work?

Do you feel weak or nauseous or have frequent headaches?

Do you feel that the pace of work is faster than what you can comfortably manage? Do you frequently feel tense or anxious at work? Have you experienced weakness, lack of appetite, dizziness, sadness, or any unusual feelings that have concerned you?

Have you ever had medical check-ups at work? What did they look at?



film badge

What to Ask Radiation/Laser Workers

Have you ever suffered burns from radiation sources? Do you wear a film badge? Are they regularly tested and have you ever had a positive result? What happened then? (A positive result indicates that the worker has been exposed to radiation at a dose above the recommended level. It could also mean that the worker has had a dose less than that but as dosage can be cumulative the worker needs to make sure that she is not exposed to radiation again for a while.)

Have you ever had a miscarriage, or any other problem with fertility or pregnancy?

What to Recommend

Fumes from welding and soldering and chemical reactions such as electroplating, need to be removed from their source by specialised ventilation systems.

The speed of production lines need to be responsive to workers' requests. Workers should be given the opportunity to warm up at the beginning of the day and cool down at the end of the day.

Women working with microscopes should be given regular rest breaks and, if possible, their work rotated with other tasks to avoid eye damage and strain.

Air should be sufficiently humidified to reduce eye irritation.

Exposure to and use of ethylene glycol ethers, toluene, and xylene should be reduced to a minimum or substituted for with suitable alternatives. Areas using these chemicals should be mechanically well-ventilated to prevent fume build up.

All areas with radiation sources should be clearly marked and access restricted to only those personnel with authorisation. All machinery should be regularly checked and the shielding tested. Those working with ionising sources such as X-rays should wear radiation film badges.

All workers should have medical checks at the company's expense, and the examination protocols matched to the hazards of the job.

All workers need to be given induction training about the hazards of work and safe working practices.

Fire extinguishers specific to the needs of the area (electrical, chemical, or normal) should be placed at regular intervals. All fire exits should be unlocked and the exits free of litter.

Workers should be trained to use the fire extinguishers.

Workers require several rest breaks throughout the day to refresh their bodies and eyes and to reduce work stress. Setting aside rest areas with water and chairs near the work station will maximise rest time and reduce time to return to the workplace.

All chemicals should be clearly labelled and the handling procedures available to all workers. Managers should keep Material Safety Data Sheets (MSDS) in an area where staff can read them.

All women doing microscope-based work should be given regular eye tests and glasses if required, and paid for by management.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

FOOD PROCESSING INDUSTRY

Hazards

1. Cancer-causing agents such as acetaldehyde, used as a flavouring base for butter and fruits, dichloromethane that is used to extract fats and used in cocoa, ethylene acrylate and ethylene oxide that are both used as flavouring agents and flavour enhancers.
2. Allergies to spices, chemicals, and food products used.
3. Muscle strain injuries from rapid, repetitive work.
4. Noise-induced hearing loss.
5. Steam burns.
6. Potential for birth defects in women regularly exposed to ethylene oxide.



7. Back injuries from manual handling.
8. Effects of hydrogen chloride used in the refining and processing of food oils.
Hydrochloride acid is highly corrosive to eyes, skin, and mucous membranes. Sulphuric acid is also used in food processing for breaking down cellulose and refining oils, and carries the risk of skin, eye, and mucous membrane damage.
9. Those working with seafoods, in particular crab meat, are susceptible to allergic asthma.
10. Stress due to the work pace, shift work, etc.
11. Falls and accidents due to slippery floors and unguarded machinery.
12. Falls into food preparation vats.

What to Look For

Is the workplace well-lit?

Is there a good match between the height of the work surface and the women? Do they have to reach forward or upward to do their work?

Do the chairs have backrests?

Is the noise level excessively high?

Are there fumes or is the smell in the air laden?

Are the floors kept well-cleaned and free of grease?

Are there trolleys and other lifting and carrying devices?

Are the moving parts of machines well-guarded? Do hot pipes or hot parts of the machinery have insulating coverings?

Do workers handling chemicals wear protective clothing such as safety goggles, aprons, and gloves?

What to Ask Workers

Do you feel that the work pace is easy to keep up with? Do you feel tense during the day?

Are you able to talk easily with other workers, or is the noise level too high?

Have you or your friends had trouble with allergies such as persistent sneezing or runny nose?

Has anyone suffered from skin or eye burns from acids?

Do you experience persistent pain in the back, arms, shoulders, neck, or hands?

Do you know of women who have had birth problems; the babies not being normal? Has this happened to more than one woman here?

Has anyone had a serious accident here? Would you like to tell me what happened?

Has anyone become very ill after working here for several years?

What to Recommend

All cancer-causing agents listed above should be phased out and replaced with non-toxic substitutes.

Workers handling chemicals should be given appropriate protective clothing such as

goggles, aprons, and gloves.

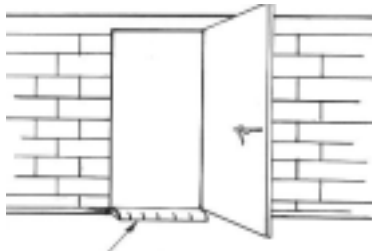
The workplace should be carefully ventilated to reduce the amount of potential allergy-causing substances present in the air.

The floor should be regularly cleaned with detergents to prevent the build-up of grease and grime.

All machinery and vats should be guarded and railed to prevent accidents.

Adequate medical records should be kept to keep track of any long-term illnesses among workers.

Exposure to ethylene oxide and acrylic should be kept to a minimum by use of protective clothing and engineering solutions, such as ventilation and enclosure of the processes.



raised sill like a small speed hump

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

HAIRDRESSING

Hazards

HAIRDYES

1. Hair dyes can cause reproductive hazards: they are linked with genetic changes that are passed on to the next generation. Some dyes have been thought to affect sperm production.
2. Research has indicated a link between some hair dyes and genital cancer. It is thought that there may be an increased level of breast, lung, and digestive system cancers in beauticians.
3. High blood pressure in pregnant workers, with leg swelling and what looks like egg white in the urine. Cosmeticians have been found to have smaller babies and higher rates of miscarriage.

PERMANENTWAVINGLOTIONS

1. The waving lotions contain solvents that can irritate the eyes and skin.
2. The neutraliser contains bromides that are very flammable if allowed to dry out, which is also the case with bottles containing mixed chemicals left in stoppered bottles. The gas sometimes expands, particularly in hot climates, and can cause the bottles to explode.
3. Sensitisation to the liquids.

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HAIR STRAIGHTENING MIXTURES

Sodium hydroxide (caustic soda) found in straightening mixtures can damage the skin and can blind hairdressers if the concentrate gets into the eyes and is not washed out.

OTHER COSMETICS

1. Some shampoos can cause sensitisations and dermatitis. Hand creams with lanolin should be used. The ingredient called ndela (used in South Asia in particular) is in fact a nitrosamine that is very toxic and linked to cancer.

2. The solvent glues used over long periods to stick on plastic nails have been associated with nerve damage.

3. Long-term exposure to formaldehyde found in shampoos, mascara, and nail products can be linked to lower respiratory problems (coughing, shortness of breath), eye irritation, skin rashes, headaches, dizziness, nausea, and vomiting. Formaldehyde is thought to cause cancer.

4. Hairsprays can lead to shortness of breath, eye damage, and reduced lung capacity.

5. The propellants (things that create the force to make the mist) are highly inflammable. These are a bit like natural gas in stoves and are likely to explode if heated. If not disposed of properly, they may cause severe injury if they blow up.



Worksafe Australia News

OTHER PROBLEMS

1. Standing all day is hard on the legs, leading to varicose veins and extreme pain in the leg muscles.

2. Fine ends that are cut from hair can cause respiratory illness.

3. Cuts from scissors frequently take a long time to heal because hands are often wet and chemicals continue to irritate.

4. The older type of stand hairdryers have been found to use asbestos inside the barrels to insulate them. The asbestos can break down and the fibres that float in the air can be inhaled by hairdressers. Asbestos is known to cause special types of lung cancer and little is known about how much or how little it takes to start this process.

What to Look For

Are pregnant women using hair dyes?

Does the salon use standing hair dryers? Are hair dryers lined with white flaky stuff that may be asbestos?

How are wastes disposed of, particularly chemicals and spray cans?

Are hairdressers provided with wheeled stools rather than having to stand all day?

Are all bottles of chemicals labelled and do they have warning and first aid information?

Do hairdressers use gloves or water repellent hand creams?

Is the salon well-ventilated?

Are electrical cords and power points situated at a distance from wet areas? If they are close by, do they have special insulated and waterproof sockets and fittings?

What to Ask Workers

Have you ever tried wearing gloves at work to mix chemicals? Do you do this normally?

Have you or your co-workers ever become really ill, or had trouble with pregnancy?

Do you regularly read the labels on the products you are using?

Have you ever requested more detailed information from the manufacturer?

Is your skin itchy and red?

Do you regularly use lanolin-based hand creams?

Have you ever had training in the safety measures needed to use hair dyes and other cosmetics and hair products?

Are you careful to tell other staff and customers not to smoke when you use hairspray?

Where do you eat your food or snacks? Are you in the habit of washing your hands before eating?

What to Recommend

Some countries have a good supply of natural hair dyes such as henna, which lasts as long as “modern” commercial dyes. Natural dyes should be used as often as possible.

Gloves and hand cream should be given to the staff to protect them from skin absorption of toxic products and dermatitis.

Get rid of all old hair dryers in favour of the new modern hand-held ones. Make sure they are made without asbestos.

Try using hair setting lotion or gels instead of hairspray, and neutralisers containing peroxide instead of bromates.

Staff who are pregnant should be given cutting duties and not allowed to dye hair.

Make sure that electrical appliances are regularly checked. All sockets and fittings should be waterproof.

Notes

KAPOK INDUSTRY

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Hazards

1. Dust or fibres causing irritation of the respiratory tract.
2. Fire.

What to Look For

Is the workplace adequately ventilated?

Is there a suitable number of fire extinguishers? Are they well-maintained? Is there a fire exit in the factory? Is it locked?

Are there signs placed in the workplace prohibiting smoking?

What to Ask Workers

Do you suffer from wheezing, coughing, or runny nose? How long have you been suffering this?

Have you been given a dust mask to wear while working?

Do you know how to use the fire extinguishers? Are the fire exits usually left unlocked?

What to Recommend

There are only two major hazards. The dust can cause allergic reactions like hay fever, itchy skin, or inflamed eyes. Longer exposures produce bronchitis and emphysema.

Make sure the premises are well-ventilated, preferably with extraction at source. If impossible, workers should wear respiratory protection.

Make sure fire extinguishers are available and well-maintained because kapok fibres, when loose, are highly flammable. Ensure that smoking is strictly prohibited.

Notes

LAUNDRY

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Hazards

1. Ergonomic hazards due to the manual handling of heavy loads. Back, hip, and shoulder injuries are common in laundries, particularly if trolleys are unavailable. The danger is greater when the laundry is wet and even heavier and more difficult to manage.

2. Bacteriological or other infections. Sometimes commercial laundries handle linen from hospitals, hotels, and other public areas, which means that the items being laundered may be contaminated with bacteria, blood, or faeces. The risk of infection from hepatitis and other pathogenic diseases is always present.

3. Detergents, heat, and humidity. During the washing process, the room usually becomes damp, floors slippery, and temperatures generally high. Because of the high humidity, it is harder for the body to cool itself by sweating.
4. Detergents and bleach can cause degreasing of the skin and can result in dermatitis.
5. Standing on wet environments can lead to chronic fungal infections in skin fold areas and feet.
6. Ironing. Heat builds up in the ironing area and can result in thermal dis-comfort, particularly if steam presses are used. Many ironing areas require women to work at or above shoulder level or to stand all day. This type of work is fatiguing.
7. Accidents. Scalds, burns, falls on slippery floors, rupturing of boilers, trapping of fingers, or crush injuries in rollers, dryers, washing machines, etc.
8. Extreme fatigue and heart strain from the combined effects of hard work and excessive heat.
9. Possible cancer threat from 2-chlorophenol used as a germicide, carbon tetrachloride, 1,2 dichlorethane and tetrachloroethylene.

What to Look For

How do they handle loads of washing: by hand or by trolley?

Is the loading bay (area) well-designed to take trolleys, or do workers have to unload from the tray onto the floor?

Are the machines too high for workers to easily load?

Is the material contaminated with blood, faeces, or other hazardous materials (for instance, industrial wastes like dangerous chemicals or dusts)? Do workers have gloves, aprons, overalls, and other protection?

Are there sufficient places with water and soap so that workers can wash after handling laundry?

Do supervisors insist on personal hygiene?

Is there adequate ventilation?

Are the floors regularly wiped to remove excess water and soap?

Do chairs have backrests so workers have back support?

Are the ironing boards too high or too low for workers?

What to Ask Workers

Do you suffer from any persistent illness? Have any of you had hepatitis or a serious illness while working here?

Do you regularly experience back or shoulder pain? How do you feel at the end of the day? Have there been times when you could not work because of back pain?

Do women here suffer red, split, and itchy hands—signs of dermatitis? How long have you had this complaint?

Do you wash your hands before eating? Where is the canteen?

Have you been given any protective clothing to wear? (If the worker is not wearing the clothing: Where is it? Why are you not wearing it? Is it comfortable?)

Is the working environment noisy? Do you suffer fuzziness or ringing in your ears when you leave work?

Have you been trained in safe lifting methods or on the correct use of all the machines?

Do you change or rotate jobs regularly?

Do you ever get chest pain, or experience fast and pounding heartbeat?

What to Recommend

All workers should be trained in the safe use of machinery and in lifting loads. Trolleys and mobile baskets should be provided where necessary.

Adequate washing facilities with a hospital grade disinfectant should be compulsory. Soiled linen should not be handled but loaded from the truck straight into the washing machines if possible. If this is not possible, it should be washed on arrival with no delay because bugs breed.

All hot parts of the machines should be insulated and steam traps fitted to prevent bursting and scalds.

All belt drives for machines should be guarded and interlocking systems fitted so that machines cannot be activated while these are open.

Good ventilation is needed to dilute airborne bacteria and to cool the premises.

Floors should be washed regularly.

Workers should be immunised against hepatitis A, hepatitis B, and typhoid.

Workers should be given rubber boots, aprons, and other protective clothing, and be supervised to ensure that these are worn. Work clothing should not be taken home for washing.

Women working at the mangles or wringers should be given frequent breaks to reduce excessive strain on the heart and circulatory system.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

LEATHER GOODS

Hazards

1. Hand and arm injuries from cutting tools.
2. Lacerations and crush injuries from machinery.
3. Solvents and adhesives such as toluene- and xylene-based materials such as glue cause

skin and menstrual disorders; toxic fumes cause dizziness.

4. Leather seems to cause allergic skin reactions—they may be due to leather itself or residues of chemicals from other processes.
5. Poisoning from dyes; some can be deadly if not used correctly.
6. Noise-induced hearing loss from loud machines.
7. Accidents caused by insufficient lighting for required tasks.
8. Cancer of the mouth, back of throat, lungs, lymph nodes, kidney, and bladder are known to be associated with leather tanning. These result from exposure to chemicals such as cadmium and hexavalent chromium, chlorophenyls, formaldehyde, methyl mercury, chlorinated organic solvents, and benzene. Some research indicates that cancer of the nose may arise as a result of exposure to leather dusts.

What to Look For

Are workers trained in the use of the machines?

Are hazardous materials used? If so, are they correctly labelled and stored? Is fire fighting equipment available, and do people know how to use it?

What dyes are used? What is their composition?

Do workers have to sit or stand all day? Do chairs have backrests?

Do workers that use dyes and solvents have periodic check-ups?

Are pregnant women working with solvents and dyestuffs?

Is there adequate forced ventilation? Can you smell the fumes when you walk in?

What to Ask Workers

Are there times when you feel giddy at work? When does this happen? When does it go away?

Do you have red, dry, split, or itchy hands which indicate you could have dermatitis?

Do you experience a ringing in your ears or fuzziness in hearing when you leave work?

Did you have training after you arrived here? What was the training about?

Have you seen the doctor for a check-up recently? When was the last time you had a medical check-up? How long have you been working here?

Do you suffer any problems with your monthly period?

Are pregnant women regularly working with chemicals known to cause cancer?

How often do you sharpen your cutting tools?

Is the lighting sufficient for the demands of the job? Do your eyes ache?

What to Recommend

Cancer-causing agents should be phased out. Work areas using solvents and adhesives should be adequately ventilated and workers periodically checked for ill health. Particular attention should be given to the mouth, upper respiratory tract, kidney, and bladder functions.

Pregnant women should not work with volatile solvents.

Workers should be able to work both standing and sitting, and chairs should have

backrests.

All chemicals should be labelled with first aid instructions and adequately stored if flammable.

Cutting tools should be kept sharp to avoid accidents.

Machines should be guarded and lighting improved to levels where workers can easily see the work.

Attempts should be made to reduce noise levels by coating walls with noise absorbing materials, such as foam plastic or papier mache. Building a box around them can isolate noisy parts of machines. Bits of rubber can be used as padding between metal parts that bang together. Rubber gaskets between the floor and the machines can also reduce noise levels. As a last resort, insist that workers use hearing protection. Muffs are preferable but good quality plugs are also effective. But not cotton wool!

Noise can be reduced by regular machine maintenance.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

MATCH FACTORY

Hazards

1. Skin irritation from picric acid. Sometimes this chemical turns the skin yellow around the mouth, nose, and hairline. Picric acid in dust form can cause damage to the whites of the eyes. Inhalation of large amounts of dust can cause weakness and muscle pain. Liver and kidney damage are also possible.
2. Allergies to waxes used in treating wood, which usually occur as skin complaints such as dermatitis. Dermatitis can also arise after prolonged exposure to gums, glues, phosphorus, ammonium phosphate, and chromates: all used in match making.
3. Flash fires or spontaneous combustion.
4. Liver, spleen, brain, and spinal cord damage from inhalation of manganese dust. The degree to which women are susceptible to this type of damage varies greatly and cannot be predicted. Early signs include loss of appetite, lack of motivation, disturbance of sensation, weakness in the legs, and irritability. If the worker is not removed from exposure, the disease progresses and memory loss occurs with outbursts of laughing, feeling "high," aggressiveness, and bouts of seeing things that are not there. Speech disturbances and "drunken" walking patterns are also indicative of manganese poisoning.
5. Stress from fast working pace.

6. Ergonomic problems due to poorly designed workplaces.
7. Puncture wounds due to wood splinters.
8. Noise.

What to Look For

Fire extinguishers at regular positions. Do these extinguishers look as though the fire authority has checked these recently? Can women handle these? Have women been trained to use these? Is there a master plan for fire-based emergencies? Are there floor fire wardens to assist in evacuation?

First aid kits should be distributed at regular intervals.

Are workers using dust masks?

Are women using protective goggles?

Is barrier cream distributed to workers to reduce damage to sensitive skin or the development of dermatitis?

Is the production line going at a pace that appears to cause stress to the women?

Do any of the workers look like they might have manganese poisoning? (see above for symptoms)

Is the factory well-ventilated?

What to Ask Workers

Do you ever feel any of the symptoms listed above?

Do you suffer skin problems like dermatitis?

Do you feel tense, fearful, or anxious at the end of the day?

At the end of the day, do you experience ringing or buzzing in your ears?

Do you have chronic pain in the legs, back, arms, or shoulders?

What to Recommend

Women should be given close-fitting overalls to prevent loose clothing coming in contact with spontaneous fires.

Annual medical check-ups for women, or immediate placement in other work if women show any sign of manganese poisoning.

First aid kits and training should be made generally available to women workers.

Process lines should be under the control of women, or should at least be responsive to their work pace. Workers should be able to warm up and cool down at the beginning and end of each working shift.

The workplace should be well-ventilated and the temperature kept constant.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

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NURSES**Hazards**

1. Back injuries from lifting heavy and sometimes distressed patients.
2. Blood-borne infections (Hepatitis B, HIV) from needle punctures (needle stick injuries) or scalpels, or exposure to contaminated blood or other body fluids in casualty or the wards.
3. Infectious diseases such as TB, rubella (German Measles), and diarrhoeal diseases from patients.
4. Dermatitis from the need for continual hand washing and cleanliness.
5. Reproductive risk from exposure to anaesthetic gases (especially halothane at concentrations above 1ppm/8 hrs shift, nitrous oxide at 100ppm/8hrs shift, and isoflurane and endflurane at 10ppm/8hrs shift).
6. Exposure to radiation in laboratories; diagnostic and treatment facilities.
7. Violence and injury from upset, violent, and delirious patients.
8. Stress—from incessant demands, poorly designed shifts, lack of control, conflicting demands.
9. Fatigue from long hours and poor diet.
10. Slips and falls on highly polished floors.
11. Addiction to sedatives and other available drugs.
12. Electric shock from poorly maintained equipment.



Worksafe Australia News

Nurses should lift in pairs.

What To Look For:

Are hoists or other lifting devices provided that assist nurses to lift or transfer patients?

Are used hypodermic needles and scalpels disposed of in special containers (known as sharps boxes). Are needles re-used (increasing the risk of injury, as the needle becomes blunt and may slip—as well as of course risking the transfer of infection from one patient to another)?

Are nurses vaccinated against known infectious diseases, particularly rubella, which is known to cause severe birth defects?

Do nurses have regular medical check-ups?

Do nurses participate in the design of shift rosters, and do they have adequate time to adapt to one shift before changing to another? Rapidly rotating or collapsing shifts have been found to be most injurious to health.

Is the operating theater well-ventilated so that anaesthetic gases do not build up?

Do the cleaning staff signpost wet or slippery floors so that nurses can take extra care?

Are drug registries kept to account for drug use—particularly those that might be Are they

problematic?

Are all nurses made aware of the importance of avoiding needle stick injuries?

Is there always more than one staff member on duty at night, or can nurses easily call for assistance if in trouble?

Are there radiation-proof booths into which nurses can retreat while using radiation sources (mammograms, X-rays, and treatment doses of gamma rays etc). Are nurses aware of the risks and why they should take precautions?

Notes

PAINTING AND VARNISHING

Hazards

The degree of hazard varies with the method of application (see below) and type of materials used.

1. Fire is always a hazard, unless water- or trichloroethylenetrichlorethylene-based paints are used.
2. Dermatitis from the degreasing effect of solvents and thinners.
3. Dusts from rubbing down can cause lung irritation; lead inhalation if lead-based primers are used.
4. Methylene chloride that is used as a paint stripper is very hazardous. It is thought to be a cancer-causing agent and should not be used.
5. Smoking enhances the inhalation of paint fumes and speeds up the formation of carboxyhaemoglobin⁸ that can cause drowsiness and accidents.
6. Damage to the nervous system that shows as memory loss and slowness of thought as a result of inhaling solvent fumes. While symptoms such as dizziness and light-headedness tend to go away once work with solvents is stopped, evidence of permanent nerve and brain damage persists.
7. Some reproductive disorders, such as miscarriage or low birth weight (and possible early death of babies due to excessively low birth weights and early birth) have been associated with some of the solvents used in the painting and varnishing industry.

Normally, when oxygen bonds with the the red part of the blood, it does so loosely so it can be easily released into the tissues. When a person inhales carbon monoxide, the carbon monoxide bonds permanently with the red cells so there is less haemoglobin available to carry oxygen. In cases where carbon monoxide rates are high, this can lead to death from oxygen starvation. Red colour is due to haemoglobin.

What to Look For

What method of paint application is used: hand painting, dipping, spraying, airless spraying (pressures may be dangerous), electrostatic (workers need to be earthed⁹), roller, or veil?

Where is the paint applied? Is there sufficient ventilation? Do they use special spray booths? How much drift of paint occurs throughout the rest of the workplace?

Are cartridge respirators, which are the correct personal protection, used? (see illustration)

⁹ The term "earthed" refers to the process of making a non-dangerous electrical contact with the earth that allows electricity to be conducted to the ground without harming the workers. Machinery and wiring should be earthed, that is having special wires which conduct electrical charge to the ground. Wearing rubber soled shoes will help workers resist shock by conducting the electricity to the ground.

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cleaned often?

Are workers encouraged to wash up after each work cycle? Do they use solvents to wash their hands, or does management provide special cleansers?

Are there good facilities for washing and are they used before eating?

Are workers trained to use equipment carefully?

Are fire fighting equipment easily available?

Are flammable liquids stored in a metal cupboard or stored outside (if in large quantities)?



What to Ask Workers

Do you always wear breathing protection? How often do you or the supervisor clean this equipment? Can you smell the paint fumes when you wear the equipment?

Do you wash your hands before eating?

How do you wash up?

Show me what you use to clean your hands.

What to Recommend

Improve the ventilation and use spray booths where appropriate.

Train workers to avoid skin contact with paint.

Gauze masks are not sufficient; in fact, they make the situation worse as they concentrate the fumes. Use cartridge respirators with correct filters and enforce the wearing and maintenance by correct supervision.

Substitute water-based paints if possible.

Provide skin cleanser instead of solvents for wash-ups. Gloves are necessary in many situations to protect hands from dermatitis.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

PEARL INDUSTRY

Hazards

1. Ionising radiation. This is sometimes used in the form of fluoroscopes to check the pearl size.
2. Contact dermatitis from contact with the body fluids of the organism.
3. Organic solvents and silver nitrate in artificial pearl manufacture.
4. Overcrowding and overheating.
5. Eye and skin burns from acid-based processes.
6. Eye strain due to poor quality lighting.

What to Look For

Are workers using fluoroscopes? If they are, are they using film badges? Radiation is a significant pregnancy hazard.

Are the fluoroscopes fully enclosed with remote controls used to insert the pearls, or do the worker's hands enter the scope?

If they are using radiographic techniques (fluoroscopes), does a doctor familiar with radiation medicine regularly visit them?

Do workers use rubber gloves to protect themselves from the oyster body fluids? If they do not, do they wash regularly with soap?

If organic solvents are used, is the work area suitably ventilated?

Are fluoroscopes regularly checked for radiation leakage?

Are the workers given tongs or baskets with which to dip parts into acid baths?

Is there adequate ventilation to extract dust and acid fumes?

Is there sufficient, well-placed lighting to reduce eye strain?

What to Ask Workers

How long have you worked here?

Have you been trained in the safe use of this equipment, that is, do not put your hands under the fluoroscope without the use of special gloves?

Have you had regular medical checks?

Do you suffer skin complaints such as splitting or reddening of your hands?

Are you pregnant?

Do you have burning or sore eyes?

What to Recommend

Workers need to be trained in the safe use of ionising radiation.

Pregnant workers should be removed from the areas using radiation.

Gloves and tongs or wire baskets should be provided for dipping.

The area should be ventilated.

Regular medical check-ups should be arranged and paid for by management.

PHARMACEUTICALS

This is a difficult industry to be precise about, as the number of chemicals and compounds used is huge. Below is merely a guide to the major issues.

Hazards

1. Exposure to the active principles (that is, the strongest ingredients in the medicine) of the drugs in the form of air borne dusts. Hormones (in contraceptive pills, for instance), steroids, and antibiotics (see below) are the most troublesome. But each workplace should be carefully assessed for its specific products and remedial steps taken where required.
2. Exposure to male hormones can result in the cessation of menstruation and a process of masculinisation, where women's body hair becomes thicker and darker and their voice may deepen. They may get pimples or oily skin. Exposure to women's hormones, such as those in contraceptive pill manufacture, may also cause menstruation to stop and cause pain of the breasts.
3. Those working with insulin can experience runny noses, sore throats, and increased white blood cell counts (white blood cells, the soldier cells, help the body fight disease; red blood cells carry oxygen to the lungs).
4. Antibiotics may cause extreme allergic reactions, including shock. But this is a rare occurrence, except where airborne dust levels are very high. In this case, it is wise to keep a look out for women who suddenly become pale, start sweating heavily, and collapse. These women should be rushed to a hospital, or they may die. The most common reactions to antibiotics are red, itchy eyelids, watery eyes, and swelling around the eyes. Depending on the type of antibiotic being manufactured, some workers may experience very stuffy or runny (and sometimes bleeding) noses.
5. Sometimes workers react to the manufacture of antibiotics through swelling in their throats or by a form of asthma that causes wheezing and narrowing of the throat.
6. One of the very nasty side effects of working with some antibiotics is when the body starts generating defence reactions to itself—the white blood cells begin to fight against normal body cells.
7. Damage to the inner parts of the ear leading to deafness has been found among those manufacturing kanamycin and streptomycin in its various forms.
8. Bone marrow disease has been associated with making chloramphenicol, while the manufacture of virtually all antibiotics can produce kidney and liver complaints.
9. Other effects include the failure of the system that enables new blood vessels to function well, which then results in anaemia, the appearance of strange dark patches on the skin, and pimples.
10. Noise from the machines.
11. Ergonomic hazards in packaging lines.
12. Burns from pipes and machines used in the sterilisation processes.
13. Ultraviolet radiation, which is a hazard for eyes and may raise the level of ozone in the air.
14. Risk of fire and explosion from the use of amyl acetate and acetone applied in the extraction process.
15. Antibiotic resistant germs that may thrive in the factory may enter and infect wounds.
16. Some women may have to work inside chemical suits, which may provoke panic reactions or feelings of being closed in and isolated. They may feel breathless, dizzy, or

¹⁰Scrubbers are used to remove toxic chemicals so they don't enter the wider environment.

weak, and feel like they are suffocating. It is hard for women wearing these suits to talk with each other, so they might feel stressed and isolated.

What to Look For

Obvious signs of airborne dust. Use your nose to detect dusts, look at shelves and window ledges to see if there are sediments.

Incorrect functioning of production machines, which allow chemical residues to escape.

Is the workplace adequately ventilated with special filtration systems to eliminate germs?

Are the various medicine mixing and making processes enclosed in sealed tanks?

Do workers have adequate protective clothing, such as light overalls, cloth hats, and gloves?

Is work in the sterile areas limited to four hours per day?

Is the workplace—walls, floors, and all surfaces—cleaned each day with sodium hypochlorite? Is the worker who does this cleaning suitably attired with cartridge respirator, boots, and overalls?

Do all workers have regular and specialised medical check-ups? Is there a system of pre-employment screening in place to reduce the number of women who may be susceptible to the effects of the medicines being manufactured? Medical check-ups are very important for pregnant women and need to be conducted during pregnancy, before the woman goes on maternity leave, and upon her return to work.

What to Ask Workers

If it is obvious that powder is drifting and there are signs of residue in places where antibiotics are being packed, ask the women if they are pregnant because antibiotics and some other pharmaceuticals may not be safe for pregnant women.

Have women working here experienced problems with pregnancies? Describe these.

Have you ever had sore hands or wrists, or do you experience tingling sensation in your hand? If yes, show me which fingers tingle? If the affected fingers are the index to middle fingers, workers are showing early signs of Carpal Tunnel Syndrome and need to be moved to another form of work.

Do you regularly suffer from back pain?

Have you experienced any of the symptoms mentioned above?

If you work in a sterile area, are you also trained to work in other areas?

Do you have adequate washing facilities that enable you to wash before going home?

Have any of you been moved to another job because you developed an allergy to the drugs?

What to Recommend

As reactions to the drugs can have serious consequences for women's health, the company needs to institute pre-employment medical check-ups and regular testing of all workers, including cleaning staff, for allergies and reactions to the drugs being used. This is particularly important if the company is manufacturing antibiotics. Your government's Department of Health should have a protocol (specialised system) for testing workers. It is important that this protocol be followed, as general medical check-ups are of very little value.

Workers found to be allergic should not use antibiotics for a few months for any illness they may suffer, and they should be moved to a different job (for instance, packing, labelling, or quality control) that takes them away from immediate contact with the drugs.

Ventilation should be improved. Scrubbers¹⁰ should be put on the outside to prevent pollution of the external environment.

Clean, cool drinking water must be made available to all workers, but especially to those in hot, drying rooms and sterile areas where dehydration may occur.

Workers should be able to perform tasks while standing or sitting. Chairs must be fitted with backrests. Task variation is necessary for those doing rapid, repetitive work to avoid muscle strain injuries.

If the environment is noisy, hearing protection must be worn and its use supervised.

Workers in chemical suits should only be expected to spend limited amounts of time in the sterile areas so as to reduce psychological pressure.

All contact with antibiotics should be avoided by sealing tanks or isolating the production processes.

Walls, floors, and all bench surfaces should be cleaned each day with sodium hypochlorite or another cleanser that kills germs to avoid the development of resistant colonies. Cleaning staff should be well-protected from chemical vapours by the use of cartridge respirators.

Workers should be given hand protection such as barrier creams and fine latex gloves to prevent skin contact with pharmaceuticals. Other protective clothing such as lightweight overalls, booties, and hair coverings should also be provided.

Washing and showering facilities should be provided, as they are vital for preventing workers from taking dusts and other residue home where they can cause harm to children.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

PHOTOGRAPHIC INDUSTRY

Hazards

1. Possible cancer-causing agents such as 1,2 dichloroethanedichlorethane (used as a fixative), dimethylhydrazine (a mediating chemical), formaldehyde and resorcinol (both hardening agents), toluene, and 2,4 diamine (which develops the image).
2. Skin cancer from exposure to ultraviolet light.
3. Skin disorders from sensitisation or allergy to photochemicals:
 - ♦ Dermatitis and contact burns (caused by contact with acids and bleaches, metal and p-phenylenediamide)
 - ♦ Darkening and lightening of the skin (caused by hydroquinone)
 - ♦ Lichen planus (tiny, red spots which itch and scale) caused by coloured developers.
4. Respiratory distress from exposure to the photochemicals, acetic acid, formaldehyde, hydrogen sulphide, sulphur dioxide, and various solvents.
5. Male and female reproductive hazards (infertility) resulting from exposure to methyl cellosolve and ethylene glycol ethers.
6. Some other toxic effects such as blood disorders from the use of bromide-containing chemicals. This may also be responsible for damaging the baby in pregnant women.
7. Explosion of chemicals stored in glass bottles.
8. Electric shock caused by poor wiring in close proximity to liquids.
9. Accidents due to slippery wet floors and poor light.

What to Look For

Ventilation is extremely important in photographic enterprises which require about 20 air changes per hour at a minimum for smaller rooms, and at least 10 changes per hour for larger rooms. Check the rate of ventilation in black and white developing areas.

Do colour-developing baths have a special slot or local exhaust systems?
(illustration)

Are chemicals pre-mixed or do they arrive as dry powders that need to be mixed with liquids?

Are gloves, tongs, and goggles available for workers who need to transfer photographs from one process to another?

Does the enterprise use carbon arc lamps for lighting photographic studios?

Are photochemicals stored in plastic or glass bottles?

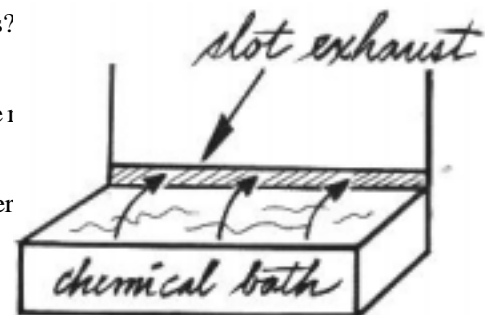
Are the floors well drained with channels to take spilled chemicals out of the room and into collection trays, where they can be neutralised before disposal or recycling?

Are all workers trained to clean up all chemical spills immediately?

Are workers given uniforms, and is there a sufficient supply to allow workers to change if they spill chemicals on their clothes?

Is there a first aid kit readily available?

Are electricity-bearing wires kept off the floor and out of range of wet baths?



If the enterprise does speciality printing such as Daguerreotype, do they use dangerous metals such as mercury, lead, chromic acid, cyanide or uranium?

What to Ask Workers

Do you suffer from itchy and splitting skin? Or does it have tiny red spots that have spread to join together and become open (ulcerous) wounds?

Have you noticed patches of your skin becoming lighter or darker?

Do you suffer from persistent coughs, colds, asthma, or general wheezing?

Has anyone here been diagnosed as having problems with their blood?

Do people have problems with wet, slippery floors? Do you think the floor is drained well enough?

What to Recommend

The use of carbon arc lamps should be phased out, as they produce large amounts of ultraviolet light and hydrogen cyanide (ultraviolet light is dangerous to the eyes—causing cataracts—and hydrogen cyanide is possibly fatal if allowed to accumulate). Instead, halide or quartz bulbs or other high intensity light sources should be used.

All chemicals should be pre-mixed to prevent the risk of powders becoming airborne dusts that cause respiratory distress.

All small workrooms should have air changes of at least 20 per hour; larger rooms should have air changes of at least 10 per hour to extract irritant fumes.

Have an electrician check all the power sources, and make sure wires are anchored to the walls well above water sources to eliminate risk of electrocution.

Make sure all chemicals are stored in plastic containers and at eye level. All containers should be clearly labelled and Material Safety Data Sheets (MSDS) available regarding the precautions to be taken with the chemicals.

All dangerous chemicals used in specialised processes such as Daguerreotype should be stored separately and used in areas suitably ventilated to reduce risk.

All employees using chemicals directly should be given tongs, gloves, and aprons to minimise contact with chemicals.

Males should be given regular medical check-ups with emphasis on sperm count each year.

Women should not routinely work with ethylene glycol ethers unless the chemical is controlled. They should be warned of the risk of reduced fertility.

Workers should be adequately trained in the correct handling of chemicals. For instance, the importance of adding acid to water and not the other way around, and the importance of cleaning up directly after spills.

All processing baths should have slot extraction ventilation installed at the back of the bath.

Eye wash stations should be provided in case of chemical spills and splashes into eyes.

All workers should be given uniforms to reduce taking home clothing saturated with chemicals and bringing health risks to their family.

Chemicals should be cleaned up with specialised chemical absorbents that also neutralise chemicals.

Provide first aid kits and first aid training.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

PLANTATIONS

Hazards

1. Heat stress and dehydration.
2. Poor hygiene: lack of fresh water and adequate toilets. Pesticides or faeces-contaminated drinking water.
3. Fatigue.
4. Exposure to hazardous chemicals: sprays, aerial dusting, fertilisers, etc.
5. Manual lifting of loads.
6. Bites from venomous insects, animals, and reptiles.
7. Injury from poorly designed and poorly maintained handtools.
8. Ergonomic hazards from bending and stooping for long periods.
9. Injury from machines such as threshers or dryers.
10. Lightning. Plantations are often exposed areas where there are few places for shelter from storms.
11. Diseases, e.g. malaria.
12. Exposure to pesticide residues on crops.

What to Look For

Are workers given adequate shades (small huts or lean-tos) and at least 5- to 10-minute rest breaks per hour when the day is hot (30°C or more)?

Do workers have ample access to clean, uncontaminated drinking water?

Are pregnant women expected to handle large or heavy loads?

Are hazardous chemicals and substances stored in locked cupboards?

How are dangerous residues disposed? Do they contaminate the water supply?

How are empty pesticide containers used?

Is the housing adequate with lightning protection, sanitation, and water?

Is there a first aid kit available with antidotes (remedies) for any poisonous insects or reptiles that are around?

Is there a risk of malaria, schistosomiasis, or other diseases? Are the workers given medication and adequate medical surveillance (at least once every six months)?

Are tools designed with long handles to reduce the need for bending or stooping?

Is there assistance available in the form of trolleys, tractors, and draft animals to handle heavy loads?

Are ladders safe (free from worm or ant infestations), well-tied with strong materials, or made of aluminum to reduce the carrying load?

Are there adequate fire fighting kits around in case of fire?

Who maintains the handtools and how often?

If snakes are a problem, do workers wear high boots?

What to Ask Workers

How do you feel at the end of the day? Do you suffer back, neck, or shoulder pain? How long have you been feeling these? Does it go away at night?

Show me where you get your drinking water. How does it taste?

What kind of food do you eat each day? Do you feel it is sufficient for your needs?

Where do you live? Please show me your house. Who lives here with you? Where do your children play?

Do you get containers for food or water from the company? Please show me.

How many rest breaks are you able to take per day?

How would you describe your work?

Who maintains your tools?

Has a nasty insect, animal, or reptile ever bitten you? If yes, what happened? If no, would you know what to do or where to go if you were bitten?

Is lightning a problem around here?

Is there an occupational health and safety committee here?

What to Recommend

As the problems of plantations are very complex, it is important that all plantations have safety committees under the supervision of one of the technical staff. They should oversee issues such as the safe storage and disposal of hazardous materials like pesticides and herbicides, the provision of safe drinking water, and the reduction of manual handling loads.

Well-fed workers are more able to handle rigorous work. After inspecting the canteen or food provisions, make sure the owners or managers know the importance of nourishing food, with meat or fish, vegetables, rice, and fruit.

Company-provided transport reduces worker fatigue and reduces risks of injury. Tractors with trailers can be used to collect and distribute workers at each work break.

Shelters should be provided at the work site. Even a roof is sufficient to allow rest from the sun.

Ensure that workers' houses are spaced away from the crops to avoid any inadvertent spraying with pesticides or other chemicals.

Ensure that workers have periodic medical check-ups.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

PLASTICS

Most work done by women in the plastics industry is in the extrusion or injection moulding stage; that is, turning raw materials in the form of pellets into formed objects. Since vinyl chloride has virtually disappeared, the plastics industry is now a safer place to work.

Hazards

1. Heat: burns and heat stress in the premises.
2. Ergonomic hazards.
3. Trauma and crush injuries from presses.
4. Falls. Poor housekeeping with plastic pellets and grease on the floor cause accidents.
5. Electrocution.
6. Fire.
7. Dermatitis from solvents.
8. Some controversy exists as to whether styrene exposure results in menstrual disorders. It may be that at higher airborne concentrations, usually in developing nations, irregular menstrual periods or painful periods become a major problem for women.
9. Cancer hazard from the use of vinyl chloride, a well-documented cause of cancer of the liver.
10. Acute bronchitis, and water in the lungs from exposure to tri-metallic anhydride, which can also cause haemolytic anaemia.

What to Look For

Are hot parts of the machine (+50°C) insulated?

Is excess heat ventilated from the premises? Is the ceiling insulated to prevent radiant heat from the sun adding to the heat load during the day?

Do operators have swivel chairs to reduce back strain when removing forms from presses?

Are equipment well-earthed (see Painting and Varnishing) to discharge excess electricity?

Is there adequate fire protection?

Are any flammable liquids safely stored and labelled? Large quantities should be stored outside.

How is waste disposed? If waste is incinerated, is the smoke adequately ventilated? When burnt outside, does the incineration of the waste risk poisoning local communities?

Do women have regular access to clean drinking water?

Are workers able to converse at arms length without needing to shout? Are the noise levels within reasonable limits?

Are the machines and presses fitted with interlocking guards?

What to Ask Workers

Do you have any body pains? If yes, show me where.

Do you consider any part of this machine to be too hot to touch? If yes, please show me where.

Have you experienced menstrual disorders?

What to Recommend

Thick cotton gloves to handle hot plastic objects as they come off the press should be used.

Swivel chairs with backrests for women working at the presses removing objects are recommended.

Adequate drinking water should always be available.

Women complaining of menstrual difficulties should be moved to an area where styrene is not used and a method of engineering controls of styrene production, investigated.

Work premises should be well-ventilated.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes



(NATURAL) RUBBER

Hazards

1. Cutting blades and escaping bales of rubber causing crushes or falls.
2. Crush injuries in rollers.
3. Some hazardous substances are still used in the mixing and compounding processes and

may cause problems.

4. Solvent dermatitis.

5. Manual handling injuries.

6. Cumulative trauma injuries from rapid repetitive work.

7. Aniline poisoning.

8. Benzol poisoning causing dizziness, nausea, weakness, frequent urination, nosebleeds, disturbed sleep, and indigestion.

9. Cancer hazard from the use of benzidine, and alpha and beta naphthylamines. Other unknown chemicals used in rubber production seem to cause elevated rates of leukaemia (blood cancer).

What to Look For

Is the area well-ventilated to keep premises cool and to disperse fumes?

Are there trolleys and other equipment available for handling large loads of rubber? Are all the handling surfaces at the same height? Are passive conveyors used for moving loads from one point to another?

Do workers at the solvent baths wear protective clothing?

Are all hot areas of machines insulated?

Are all machines with rollers, crushers, and other heavy moving parts adequately guarded with either interlocking guards or with fencing?

What to Ask Workers

Do you have dry, red, split, and itchy hands that could mean dermatitis?

To women in stretching/winding sections: Do you experience any pain or discomfort while you are working?

Have you experienced back pain in the last year?

Have you experienced headache and dizziness? Do any of your friends look a little blue at times?

Have any workers been seriously ill?

What to Recommend

Chairs fitted with backrests, which match the height of the winding and stretching machines, should be given to women workers. Work should be done at elbow or waist level, not with arms or elbows raised.

Rubber can be a heavy and clumsy load to handle manually. Many back injuries are caused when loads suddenly shift, causing twisting to the back. The women workers should be able to handle the rubber by using a system of trolleys and passive conveyors (see illustration), all preferably at the same height as the entrance to the heat treatment machines and washers.

Gloves, aprons, and boots should be given to women working at the solvent baths. Good ventilation should be available to carry fumes out of the premises. Drench showers should be available if aniline is used, and oxygen should be available in case of acute poisoning.



A passive conveyor line at working height

Train workers to observe signs of aniline poisoning (blue lips and earlobes).

Frequent rest breaks with free, available drinking water is required if the work is arduous and hot.

Hearing protection may be required if noise levels exceed 85 decibels, or if workers have to shout to communicate to someone at arm's length.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

SHOES

(including sports shoes)

Hazards

1. Potential of various forms of cancer and blood disorders developing from the use of glues and cleaning agents containing benzene and other solvents; benzene is the major cancer-causing agent.
2. Ergonomic problems (back and upper limb disorders) from poorly designed workplaces, especially poorly designed seating, and long periods of repetitive work.
3. Target systems of work, which generate excessive working hours.
4. Gynecological disorders, such as painful menstruation and feeling heavy or dragged down in the lower abdomen from long periods of standing. Potential reproductive hazard from exposure to mixed solvents, especially toluene and xylene. Hexane and acetone, at high exposures over time, can lead to reduced fertility .
5. Noise-induced hearing loss from exposure to noisy machines such as eyeletting, pressing, and trimming machines.
6. Skin disorders from use of solvent-based glues and cleaners.
7. Depending on the types of glues and cleansers used, a combination of the following signs of intoxication may be felt by workers: headaches, drowsiness, dizziness, lack of appetite, pins and needles—signs that the nervous system is being affected.
8. Eye and skin damage from exposure to ultraviolet light over 300nm in wavelength.
9. Hand injuries, such as cuts and amputations from the grinding activities, pressing, and cutting machines.
10. Breathing problems caused by exposure to a group of chemicals known as isocyanates that are added to the glue to hasten the drying and hardening process.
11. Dermatitis and other skin problems from solvent use.

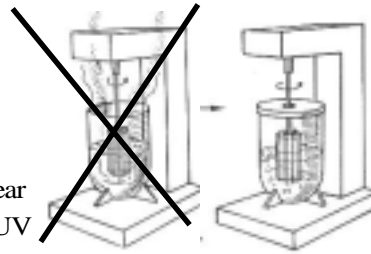


What to Look For

Do the seats have backs on them and do they match the height of the work?

Does the workplace have ventilation that allows solvent fumes to be removed as close to their source as possible?

Do ultraviolet (UV) process lines have well-guarded machinery with heavy plastic or rubber flaps to stop the ultraviolet “leaking” out? Do workers using UV sources wear protective glasses? (The best glasses to wear when using UV sources are those made of polycarbonate.)



Mixing machine - Lids can significantly reduce the risk of breathing problems caused by isocyanide

Is the place well-fitted with fire extinguishers in case of fire?

Are areas that store and mix glues and solvents well away from the normal work area?

Do women who use solvents protect their skin with gloves or suitable barrier creams?

Are pregnant women using solvents? Are they standing or sitting for long periods of time without relief?

Are glue mixing and polymer making areas using enclosed mixing machines (see illustration) to stop the escape of fumes?

Do presses or cutting machines have a double button system (both buttons have to be pushed to allow the press or cutter to fall) to reduce the risk of hand injuries?

Are all machines with moving parts well-guarded?

Do workers mixing glues or pouring glues wear suitable protective breathing protection that fit well onto their faces to reduce the amount of fumes they breathe in? Masks made of

Examples of well guarded machines

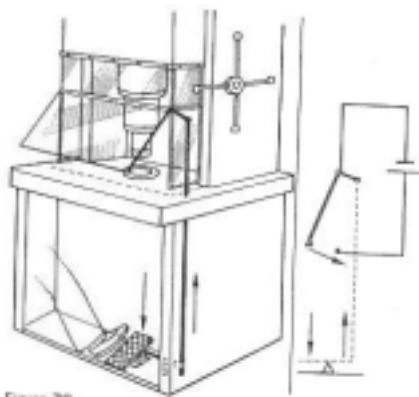
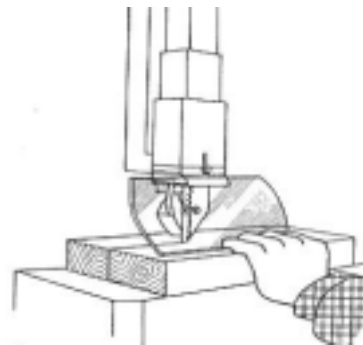


Figure 70
Pedal activation of an interlock guard



Adjustable guard for a band saw

cotton fabric like those that doctors wear are not suitable protection. What is needed are special masks with round cartridges at the base to absorb dangerous fumes.

Are all moving wheels and other moving parts of machines, particularly those at bench height, adequately guarded?

What to Ask Workers

Have you often experienced any of the following symptoms: eye and nose irritation, feeling dizzy or “drunk,” headaches, sore throat, strained eyes, loss of hearing, itchy skin, joint

pains, loss of strength, shortness of breath, dimmed vision, light-headedness, weight loss, or frequent coughing?

Do you regularly suffer painful or heavy periods?

Do you experience back, leg, shoulder, arm, or neck pain?

Do you experience ringing in the ears or suffer from dull or woolly hearing?

Have you or any other co-worker had a serious accident here, particularly a hand or arm injury?

To workers mixing glues: Do you have problems with breathing or do you regularly have headaches?

What to Recommend

All glues containing benzene, toluene carbon disulphide, or chlorinated hydrocarbons should be replaced by less toxic substances. Note that water-based glues, while less acutely toxic, may introduce other more hazardous hardeners, so check this out.

All pots and jars containing solvent-based glues should be stored outside in case of fire. Smaller jars of glue can be used at the workplace but these need to be sealed to reduce fume levels.

Areas where xylene, toluene, n-hexane, or methyl ethyl ketones are used have to be well-ventilated at all times by forced exhaust fans near the source of the fumes. Also, chemicals known as paraffinic hydrocarbons and isocyanates need to be well-ventilated.

Workers who are required to stand for long periods should be given tall stools with back rests to enable them to work while standing or sitting. If this is not appropriate, regular breaks to leave the line and walk for three to four minutes are needed every hour.

Workers who sit should have backrests fitted to their chairs to enable them to rest their spine. Seats should be padded and covered in cotton or other “breathing” fabric—not vinyl.

Reducing the gap between the workers height, and that of the work can re-lieve neck and shoulder pains. Having to reach up or out for long periods is exhausting and reduces productivity. Using wooden pallets or duckboards that run the length of the machine, or providing seats that adjust for height, can elevate work positions. Regular breaks for exercises and position change will also reduce pain and fatigue.

After a proper noise audit by a qualified practitioner, workers in noisy areas should be given hearing protection and be trained for their use. The cheapest—but possibly not the most effective alternative—are foam or plastic industrial plugs, which should be renewed each week. Cotton wool or wax plugs are not acceptable. Earmuffs are preferable. Any hearing protection should take note of how loud the noise is and be accompanied by worker education so they can be familiar with why they have to wear an uncomfortable device.

Workers should be given medical check-ups every six months, which focus on checking the nervous and circulatory systems.

Pregnant women should be transferred to work that does not use solvents without loss of benefits. They should also be given chairs with backrests even when performing tasks done while standing.

Target systems should be discussed with the women, as they often have family responsibilities. Where possible, use a fixed shift system instead of excessive overtime. Wages should reflect the additional effort required in some tasks. Additional nutritious food and

drinks should be given to women working overtime.

Skin protecting creams should be given to protect hands from the degreasing effects of solvent glues.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

SLAUGHTER HOUSES

(Poultry)

Hazards

1. Occupational Overuse Syndrome, particularly of the wrist, fingers, and elbow as a result of rapid, repetitive movements and poor workplace design.

2. ~~Notes~~ Wounds due to being stabbed by feathers and claws.

3. Menstrual disorders, particularly painful periods from exposure to cold.

4. Knife wounds.

5. Infections from the animals themselves; these infections are known as zoonoses.

6. Allergic reactions to feathers and dermatitis due to wet conditions.

7. Stress, if the line is too fast.

8. Back and leg pains from long periods of standing.

9. Slips and falls on wet, slippery floors.

10. Back injuries from lifting heavy weights.

What to Look For

Do the women have special knives such as those that have a strap over the hand to allow them to reduce the amount of wrist movement?

Is there an interval between animals passing along the line to allow women to rest and lower their arms?

Do the women have to work at or above elbow or shoulder height?

Are there places to wash with soaps and clean towels?

Are the women working in cold areas given adequate warm clothing?

Is there a polyclinic nearby?

Is the floor frequently cleaned of fats and debris?



Special gloves and forearm guards will protect women's hands and arms from cuts and piercing wounds. Gloves made of special fibres are particularly good for chicken slaughtering. These are expensive but last for many years. The knitted sleeve will prevent cuts to the forearm common in the knife glances of bones and ligaments or of frozen meat in the food processing industry

Are there trolleys or passive conveyors available to assist women transporting heavy carcasses or boxes?

What to Ask Workers

Do you suffer pain of the wrist, fingers, or hands?

Do you have painful, infected hands, particularly around the nail beds?

Do you suffer from runny nose or red eyes?

Do you have painful periods or heaviness and discomfort with your periods?

Do you have trouble keeping up with the pace of work?

Do you feel cold for a large part of the day?

Are you able to sit down and rest your legs at each rest break?

What to Recommend

Trolleys or passive conveyors should be made available to help transport heavy items.

Women should be able to sit and stand at work, particularly if they are pregnant.

Workers should be regularly tested for allergies to animal products.

Warm clothing should be given to women working in cold rooms.

Floors need to be regularly cleaned to remove dangerous debris.

Women on the slaughter line should be given hand-strap knives to reduce wrist movement and strain.

The line should be under the control of women to enable them to slow it down to a pace agreed upon by workers and management.

Workers should be given a warm up and cool down period at the beginning and end of each day to allow the body to adapt to the fast pace of work.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

TEA PICKING AND PROCESSING

(see also *Plantations*)

t

Hazards

1. Pesticides.
2. Venomous creatures and lightning.
3. Heat stress in both the plantations and within processing plants.
4. Diseases from poor sanitation, lack of clean drinking water, and poor nutrition.
5. Work on steep slopes that become very slippery after rain can cause falls. There is risk of eye damage during the fall from impact with sharp tea bush branches.
6. Accidents in the mill; crush injuries.
7. Chest disease due to tea dust.
8. Noise.

What to Look For

Good forced ventilation in the tea mill, preferably at source. Workers should also be supplied with cartridge respirators (not gauze masks).

Provision of water, food, rest places, rest breaks, and transport for plantation workers.

Lightning shelters.

Interlocking guards or tools to ensure that workers do not crush fingers in rolling machines.

Use of pesticides and the level of toxicity.

First Aid kits should be available to plantation workers in case of accidents.

The quality of housing and the availability of water and toilets.

What to Ask Workers

To workers in the mill

Do you ever suffer from cough, wheezing, runny nose, or sore throat? Tell me when it started. Do you smoke?

How often do you wear masks or other forms of protection while at work?

To workers on the plantation

How far do you have to walk with your load of tea?

How many times per day can you rest and for how long?

Where do you get your drinking water? How often can you drink? Do you have adequate clean toilets?

What to Recommend

On the plantation

Rest breaks of five minutes every hour without prejudice to pay rates and a shaded place to rest, preferably with drinking water.

Clean drinking water to be used freely should be supplied at each site.

Company-provided transport to and from the site.

Weighing stations should be at frequent intervals to reduce the load of carrying.

Low toxicity herbicides and pesticides should be used.

Ensure good hygiene before eating or smoking. Wash hands to remove pesticide residue from hands.

In the mill

Good ventilation at source is crucial to reducing the risk of serious lung disease from tea dust inhalation.

Workers should have regular medical examinations for lung function and airway disease.

Hearing and respiratory protection (not gauze masks or cotton wool) should be supplied.

Machines should have guards, or workers should use tools to feed tea into rollers.

Good ventilation is also needed to get rid of excess heat from the premises.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

TEXTILE INDUSTRY

Hazards

1. Noise.
2. Cotton and other organic dusts that can result in allergic chest diseases such as byssinosis.
3. Poorly designed machines causing body stress and strain.
4. Accidents from unguarded rapidly moving parts, for instance, rotating wheels or shuttles.
5. Low lighting in areas where the looms are threaded can lead to eye strain.

dyes are used? Are women aware of any hazards associated with the products they use?

Is there a first aid clinic on site?

Is cool, clean water freely available, particularly in the hotter parts of the factory such as the dye works and drying bay?

Are there walkways and platforms available for women who are not tall enough to see into the looms without bending over?

Are there chairs available for rests? Can work be performed in both sitting and standing postures?

6. Some dyes such as methyl anilines cause cancer, while undiluted aniline and nitrobenzene replaces oxygen in the blood stream. Other dyes are major irritants for eyes and skin (see also Dyeing).

7. Use of chlorine-based chemicals in bleaching can result in skin disorders and breathing difficulties. Chlorine breakdown products (those that “breaks down” over time or after exposure to air or sun) are increasingly identified as probably responsible for the increased rate of breast cancer.

8. Drying creates hot and humid conditions in which workers are at risk of heat stress.

9. Fire. Cotton and synthetic materials are highly combustible (quick to burn).

10. Manual handling of loads such as large spools of thread, rolls of wet cloth, etc.

11. Viscose rayon and nylon production has a special set of hazards relating to the solvents used: carbon disulphide for making rayon and caprolactam and dilyn for nylon production. The degree of hazard depends on the length of time spent working with these substances.

Carbon disulphide is usually inhaled as a vapour and is a powerful poison to the nervous system. Long-term exposure at high concentration will result in hearing damage, brain disorders, stomach upsets, and reproductive disorders, in particular the cessation of menstrual periods. Low-level, long-term exposures will result in shaky hands, an inability to show a range of expressions on the face, and pins and needles in the arms and legs. Workers often complain of cramps, disturbances of memory, and emotional changes.

Caprolactam and dilyn seem to produce liver and kidney ailments and can make workers feel like they have pins and needles in their lower and upper limbs, as these chemicals also affect the nervous system.

12. Hydrogen sulphide is another by-product of viscose production. Its horrible smell (it is usually known as rotten egg gas) warns people that the level is building up. However, after a while, the nose can become immune and not pick up the smell. The gas actually destroys the nerve endings in the nose, which pick up the odours so you can no longer smell it after several minutes—if you can stand it that long. If this happens, the level of gas can continue to rise, which is very serious because high levels can make workers collapse, and where no one is vigilant, death in extreme cases.

What to Look For

Cotton or other fibre dusts on storage racks, roof joists, etc., indicating both a fire risk and a major respiratory hazard.

Are there guards on nip points and other moving parts of machines?

Is there adequate space between machines for workers to move safely, particularly for women whose dresses or veils may get caught in moving machine parts?

Are workers given and do they wear hearing protection?

Are safe procedures in practice around the bleaching kiers (baths) and is a well-trained person in charge?

Is adequate lighting available to enable workers to see their task clearly, particularly threading needles and heddles (eyelets through which the warp thread is put)?

Are windows and skylights kept clean, and are windows left open in factories that are not mechanically ventilated?

Is protective clothing available to workers in the dye plant? Are there suitable washing facilities so they can wash up if any dye comes in contact with the skin? What types of

Do workers need or wear respiratory protection (cotton masks)?

If this factory produces viscose rayon, are all production processes enclosed to prevent fumes from escaping into the working environment?

Are pregnant women working in the high physical stress areas such as the dryers or dye plants?

Can you smell rotten egg gas?

What to Ask Workers

Do you have trouble breathing and do you feel tightness in the chest at times? Tell me, when during the week this happens? Does it go away? When, and for how long? Note: If the worker is suffering from byssinosis (see Clothing Industry), the disease will go away on weekends and recur on Monday morning when they are again exposed to the factory dust. The symptoms in new workers are often worse early in the week, while older workers tend to get worse as the week wears on.

Do you suffer fuzziness or ringing in the ears at the end of the day?

Can you reach all the parts of the machine easily?

For dye workers: Have you noticed any change in the way you feel when you urinate? Have you noticed any changes in how you feel since you've been working here? Have you ever experienced dizziness, headaches, or felt short of breath?

Are you able to drink whenever you feel thirsty?

If this factory produces viscose rayon, do any of the workers suffer any of the symptoms discussed above under Hazards?

Have any of the women here had a history of miscarriage, early birth, or of babies dying shortly after birth, or irregular menstruation?

Did any of the workers have a medical examination before being employed here? Do they have regular specific medical check-ups now, particularly those that focus on lung diseases?

What to Recommend

Train all workers about the hazards encountered on the job, particularly the long-term nature of hearing loss or respiratory problems. Train them to notice blueness in ear lobes, nose, and lips if working in the dye plant and using aniline or nitrobenzene-based dyes.

For dye workers, drench showers and lockers with a change of clothes is essential, as is the provision of protective boots, aprons, and gloves. Better still, prevent all contact with dyes by providing wire dipping baskets with pulleys to raise and lower them. Enclose rollers with thick plastic sheeting to prevent splashes while the fabric is being rolled up after dyeing.

Enforce the use of hearing and respiratory protection.

design, and repetitive motions without sufficient rest breaks.

4. Dust. Some allergic respiratory reactions have been found, resulting in runny nose, wheezing, persistent cough, sore throats, liver enlargement, and asthma. Fast heart rate, high blood pressure, and erratic heart rhythms have also been associated with exposure to tobacco dust.

5. Red and burning eyes, and increased risk of conjunctivitis (sometimes known as Red or Sheep Eyes).

6. Fatigue from constant pressure, noise, and hostile environment.

To reduce noise, enforce a policy of regular maintenance of looms and spinning machines. Install devices to reduce noise such as those mentioned above.

The workplace should be regularly vacuum-cleaned to reduce fibres in the air.

The ventilation can be improved to reduce the concentration of dusts. Attempt to use cotton, flax, and hemp that have been well cleaned so as to reduce the amount of plant debris which are a major irritant. Use water mist when sweeping to reduce airborne dust.

Arrange regular health checks for workers including, audiograms and respiratory function.

Monitor women's reproductive health particularly women's menstrual functions and pregnancy outcomes.

Enclose or isolate any process involving carbon disulphide or hydrogen sulphide. Install gas monitors to evaluate the airborne concentrations of both these gases.

Arrange twice a year medical check-ups for viscose rayon workers. This should include ECG (electrocardiogram) to detect heart problems, blood tests, and eye and nerve tests. Women also need to be asked about reproductive and menstrual health. Note that carbon disulphide interferes with sperm production in men.

Transfer women who show signs of carbon disulphide poisoning to other work, without prejudice to their pay.

Relocate pregnant or menstruating women from work involving hot, heavy conditions such as the drying and dyeing bays. Menstruating women can reach an informal arrangement with non-menstruating workers to rotate jobs. Women who do this should not be penalised by having pay cuts or other forms of penalties.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

TOBACCO/CIGARETTE INDUSTRY (INCLUDING BEEDIES)

Hazards

1. It is thought that absorbing nicotine through the skin accounts for the high rate of weakness in labour, white vaginal discharge, miscarriage, and birth defects in the babies of women cigarette workers. Many of the cigarettes made in the developing world are made by hand, thus allowing a higher rate of skin absorption.
2. Cancer death among those women workers exposed to cigarette filters which, until the mid-1970s, contained asbestos, a material which causes lung cancer.
3. Back, neck, shoulder, and arm or hand pains from periods of prolonged sitting, poor work

7. Accidents, if hands or fingers are caught in rollers or cutting machines.
8. Green disease or fever caused by allergic reaction to green tobacco leaves. Dryness of the mouth and the genital tract. Symptoms are nausea, vomiting, dizziness, and weakness.
9. Among women picking and sorting leaves, exposure to pesticide residue may be a significant hazard.
10. Lower abdominal pain, painful periods, dizziness and tiredness.

What to Look For

Airborne dust levels. Do you feel the desire to sneeze or is your nose irritated?

Is the seating comfortable and is the work position design suitable for the task at hand, or do women sit on the floor?

Does work design include regular rest breaks?

Is the workplace notable for heat and humidity?

Is dust and mould evident in the storerooms?

Are cigarettes largely made by hand? Is there a target system in place which makes women work hard and avoid rest breaks?

Is there a clinic on site to deal with any illnesses arising from work?

If women are making beedies at home, is the room well-ventilated and properly lighted?

What to Ask Workers

Do you experience runny nose, wheezing, cough or sore throat, nausea, dizziness, burning or watery eyes? How long have you had this? Has it gone away recently?

Do you experience any discomfort in your body during the day? ^{Adjustable guard for a band saw} Show me where you feel pain or where you ache.

Do you ever suffer nausea, giddiness, loss of appetite, headache, or severe tiredness? (Check that the woman is not pregnant). If she says yes to these questions, the woman could be suffering from low-level nicotine poisoning.

Have you or any other women co-workers had problems with your pregnancies, such as miscarriages, or babies born with abnormalities, or having babies that died shortly after birth or problems with your period?

Do you have regular medical check-ups? Describe what happens.

What to Recommend

Good ventilation is the most important thing required to cool the premises and reduce dust.

Appropriate work design with appropriately designed chairs, and workbenches at elbow height should be recommended.

Fine sprays of water (misting) should be used when sweeping to keep dust down.

Assign the women to a mixture of tasks to prevent neck, back, and upper limb pains. Provide regular rest breaks with exercise.

Pregnant women must be moved from tasks that involve direct contact with nicotine-laden leaves, without cuts to their salary.

Mechanise as many repetitive leaf-based tasks as possible. Retrain women in quality

control.

Regular medical check-ups to assess lung function and exposure to nicotine, and to assess reproductive and neurological functions.

Spray-wash tobacco plants before picking the leaves to rid them of pesticide residue.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes

TOYS AND FANCY GOODS

Hazards

1. Fire Hazards. Materials used are flammable and poor housekeeping may block fire exits.
2. Ergonomic hazards from poor workplace design, rapid repetitive work, and poor seating.
3. Amputations or other traumatic injuries arising from unguarded presses for cutting shapes.
4. Compressed air. Compressed air stirs up nuisance dusts. There is also mechanical danger that can cause puncture wounds or death if compressed air is accidentally inserted into body openings.
5. Manual handling of loads.
6. Toxic paints and varnishes.¹¹

What to Look For

Is the quality of the seating poor? Are women expected to perform rapid, repetitive work?

Is the lighting of poor quality?

Is there adequate fire protection and are the exits uncluttered, unlocked, and uncluttered by rubbish?

Is there sufficient control of dusts?

Does the work design include task variation and rest breaks?

Does the company encourage and enforce the safe use of compressed air? Are safety signs posted and is smoking forbidden?

What to Ask Workers

Do you experience any pain? Show me where. Does it go away overnight?

¹¹ This is mainly of concern in premises making toys for local sale as consumer laws in the West prohibit toys that are made using toxic materials. Consumer law has been effective in reducing work hazards.

Are you troubled by coughs or dry, itchy throat?

Have there ever been any serious accidents in this company?

Are the exits routinely left unlocked during the day?

Have you been shown how to evacuate the premises in the event of fire?

What to Recommend

For women doing assembly tasks, task variation should be organised to avoid cumulative trauma syndrome. Rest breaks of 10 minutes every hour with exercises will also prevent fatigue and muscle injuries.

Good seating with backrests are vital to prevent fatigue and back strain.

Adequate ventilation and good housekeeping to keep dust levels down.

Use trolleys or boxes on wheels to reduce manual handling load.

Drinking water should be made freely available.

People using compressed air are to wear gauze masks and be inspected for cuts on the hands, as these can be opened and enlarged by high-pressure air. Anyone caught using compressed air for mischievous purposes should be disciplined.

The premises should be well-ventilated.

In view of the flammable nature of the raw materials from which many toys are made, fire prevention is of great importance. Fire drills, fire extinguisher maintenance, and ensuring that fire exits are unlocked are vital.

Material Safety Data Sheets (MSDS) detailing the properties of all the chemicals regularly used should be made freely available to all employees.

First aid kits should be provided and kept well-stocked. A person trained to administer first aid should be available on all shifts.

Notes