African Newsletter
on Occupational Health and Safety

Volume 14, number 3, December 2004

African Newsletter on Occupational Health and Safety

Volume 14, number 3, December 2004
Allergies

Published by
the Finnish Institute of Occupational Health
Topeliuksenkatu 41 a A
FIN-00250 Helsinki, Finland

Guest Editor in Chief
Suvi Lehtinen

Guest Editor
Marianne Joronen

Guest Linguistic Editor
Sheryl S. Hinkkanen

Layout of the cover page
Tuula Solasaari-Pekki

The Editorial Board is listed (as of 31 January 2002) on the back page.
A list of contact persons in Africa is also on the back page.

The African Newsletter on Occupational Health and Safety homepage address is:
http://www.ttl.fi/AfricanNewsletter

The next issue of the African Newsletter will come out at the end of April 2005. The theme of the issue 1/2005 is Ergonomics.

Photograph of the cover page: M. Crozet, ILO, Photo Gallery, International Labour Organization.

Printed publication: ISSN 0788-4877
On-line publication: ISSN 1239-4386

Contents

Occupational allergies

Occupational allergies resulting from immune hypersensitivity to substances encountered in the work environment constitute around 15% of all occupational diseases. Occupational allergies are commonly caused by hazardous chemical substances (usually of low molecular weight) or biological agents (usually high molecular weight proteins). The clinical presentation of occupational allergies is not different from allergies caused by common inhalant allergens found in the general environment. High molecular weight agents usually cause an immediate hypersensitivity response resulting in rhinitis, conjunctivitis, urticaria and asthma. Allergies of these types are generally more commonly encountered in the occupational setting than other allergic diseases, such as hypersensitivity pneumonitis (extrinsic allergic alveolitis) and contact dermatitis. Work-related factors are responsible for up to one third of cases of occupational asthma, which is often severe enough to cause considerable inconvenience, discomfort, and even the affected worker's exit from the trade.

As allergens become ubiquitous in the environment, allergic reactions encountered in the workplace closely mimic patterns in the broader community, resulting in an increasingly blurred distinction between work-related and non-work-related disease. Allergic reactions can occur as a result of worker exposure to commonly encountered allergens in both the home and workplace (e.g. seafood, wheat). Workers with known food allergy can become symptomatic as a result of cross-reacting workplace allergens (e.g. latex fruit allergy syndrome). Para-occupational exposures of family members through workers' transport of allergens from the workplace to the home (e.g. flour allergens, laboratory animal allergens, pesticides, spider mites) have emerged as an important issue. This occurs in the context of poor workplace hygiene conditions, home laundry of work clothes and home-based "cottage industries" that form a large proportion of economic activity in Africa.

Recent studies of various workplaces in South Africa indicate a much higher prevalence of atopy (allergic predisposition) among urban factory workers (45%) versus rural farm workers (25%) than in other parts of the world. Allergic sensitization prevalence patterns among workers demonstrate a panorama of putative inhalant allergens in the general environment, such as house dust mite (16–41%), cockroach (11–22%), rye grass (11–20%) and bermuda grass pollen (5–10%). Occupational allergy presenting as asthma is the third most common occupational lung disease reported in South Africa, originating mainly from health care (e.g. latex), food processing (e.g. grain, flour), motor (e.g. isocyanates) and the mine metal refining industry (platinum salts). The prevalence of allergic sensitization to occupational allergens among workers varies, with 28% of workers becoming sensitized to platinum salts (refinery workers), 26% to cereal flours (grain mill and bakery workers), 22% to spider mite (grape farmworkers), 11% to poultry faeces (poultry workers), 9% to latex (health care workers), and 6% of workers becoming sensitized to fish (seafood processors).

Worldwide, the most common causes of occupational asthma are cereal flours, enzymes, natural rubber latex, laboratory animals and chemicals (isocyanates and acid anhydrides).

It is clear that with an increasing incidence of occupational allergies globally, there is a need for a greater focus on preventive activities. These should include the introduction of strict regulatory exposure standards, workplace control measures and surveillance programmes. Manufacturer responsibility for product stewardship through detailed product labelling of allergen content is important in order to ensure overall public health and safety. Maintaining a high index of suspicion of common inhalant allergens, as well as occupational and para-occupational allergens among symptomatic workers, is crucial to the recognition and prevention of allergic diseases.

Mohamed F. Jeebhay
Associate Professor
Occupational and Environmental Health Research Unit
School of Public Health and Family Medicine
University of Cape Town, South Africa

Can information dissemination workshops reduce allergy among small-scale industry workers in Dar es Salaam?

L.M.B. Rongo
TANZANIA

Background

Because of globalization and privatization of all public industries in Tanzania, most of the retrenched workers from the privatized industries have become part of the informal sector. Aside from these workers, young jobless people from primary schools, secondary schools, colleges and even the university are active in the informal sector. There are many enterprises in the informal sector, small-scale industries being one type. Little is known about the health of workers in private enterprises, as there is no occupational health and safety organization protecting those working in the informal sector.

Small-scale industries

Small-scale enterprises are broadly conceived as "very small-scale private units employing less than 10 persons and involved in the production of goods and services for sale in both rural and urban areas. They are informal in the sense that they are, for the most part unregistered and thus not covered in official statistics, have little or no access to organized markets, to credit institutions, to informal education and training or to many public services. Because in many instances they are not recognized or supported by the Government they are often compelled by circumstances to operate outside the framework of law" (1).

A study on small-scale industries was conducted in Dar es Salaam. The industries included were garages, metal workshops and wood workshops. In garages, welders and spray painters were studied in detail. The activities covered in small-scale industries are mentioned below.

The garages investigated in the informal sector in Dar es Salaam were temporary workshops in open areas near major roads, bus terminals, marketplaces and primary schools (Photo 1). The main activities carried out in the garages were vehicle repairs, including panel beating, welding and spray painting. The welding process released very bright light and welding fumes that cause allergy (2).

A welder is supposed to equip himself with all the necessary personal protective devices, such as boots, overalls, gloves and face mask. The arc-welding room should have adequate ventilation and a shield to protect those near the welder from ultraviolet radiation. There are special overalls, nose mask, glasses, boots, gloves and hat to protect the spray painter from the paint itself and from the fumes generated in painting. Paint fumes and solvents may cause allergy (3).

Photo by L.M.B. Rongo

Photo 1. Vehicle repair processes in a typical garage.

The metal workshops studied were shelters in open spaces, similar to wood workshops, and usually had five workers. All tasks were done manually with the help of a heavy hammer, metal-cutting scissors, soldering equipment and other small-scale machinery. The raw materials used were metal scraps bought from metal plants or recycled scrap metal salvaged from discarded cars. In most cases, the lead used during soldering was recycled from old car batteries. The final products produced at these workshops were buckets, charcoal stoves, kerosene stoves, basins, rakes, hoes, and other domestic items.

Among this group, we observed exposures using a checklist. We noted exposure to excess noise, fumes from soldering, cuts and exposure to chemicals during the handling of chemicals [e.g. sulphuric acid from old batteries, thinners (paint solvents), degreasing agents and paints]. The exposures also involved substances that may cause allergy; acid, soldering flux, soldering fumes, degreasing materials, paints, and solvents (4).

Two types of wood workshops were included in the study, both usually located near major roads. The first type was a permanent workshop with fixed woodworking machines and managed by at least three workers. Workers in such workshops were directly exposed to wood dust and excessive noise when the woodworking machines were running. Sawing, planing, cutting and mortising were some of the activities done using the woodworking machines.

The second type of wood workshop was a shelter supported by four poles. The roof was a covering of old corrugated iron sheets or thatched palm leaves. Under the shelter were one or two workbenches and four to five work-

ers, with little division of labour or specialization. Workers in these workshops were mostly exposed to dust when polishing work pieces with sandpaper, when carving or when manually cleaning the workshops. Furniture is the final product turned out at these workshops. We used a checklist to note all dust exposures and use of personal protective devices among the workers.

Studies done in small-scale industries in Dar es Salaam in the past showed that most of the workers had complaints related to allergy (5–7). It was also noted that most of the workers were not using personal protective equipment (5). Most of the activities performed in small-scale industries involve exposures that entail a high likelihood of causing allergies. Wood workers have been studied in detail, and it was found that those exposed to wood dust had significantly more signs of allergy than controls (6, 7).

Information dissemination workshops in small-scale industries

An information dissemination workshop was held for the people at work in the workshops included in the study. The purpose of the information dissemination workshops was to increase awareness of hazardous exposures among the 600 workers included in the study sample so that they could protect themselves better.

For the baseline study, all exposed participants were interviewed as to their work-related exposures, awareness of exposure-related hazards and health complaints including allergy. A structured questionnaire was used for these interviews. The same questionnaire was used to interview 300 office workers not exposed to similar dusts and fumes; these interviews took place in their offices.

The same questionnaire will be used in two follow-up workshops. The change in the interviewees' level of awareness will be evaluated in the last follow-up workshop, which will be held in 2005.

Results

The results of the baseline study showed that few workers (20%) were aware of the hazardous exposures at the workplace. Allergy remains a problem in small-scale industries, as it was reported by 86% of the participants. For the small-scale industries described above, the appropriate measure agreed upon in the information dissemination workshops was the use of personal protective equipment. Since most of the workshops are in open air, appropriate engineering methods could not be recommended. The plan is to evaluate the success of the information dissemination workshops, in terms of reducing allergy and sensitivity, in 2005.

Photo by L.M.B. Rongo

Photo 2. Machine carving

Table 1 shows most of the allergic complaints reported by those exposed to workplace hazards and by the office workers (controls). The results indicated that exposed workers reported more allergic symptoms compared to controls.

Discussion

The baseline data obtained during the information dissemination workshops showed that allergy is still a problem in small-scale industries. The results were similar to findings reported earlier (5, 6).

Conclusion

The survey findings suggest that working in small-scale industries presents a high likelihood of becoming allergic to hazardous exposures.

Acknowledgement

The information dissemination workshops are supported by WOTRO Capacity Building Grant No. WCD 96-216.

References

1. Bagachwa MSD. The informal sector under adjustment in Tanzania. In: Beyond structural adjustment in Tanzania. Successes, Failures, and New Perspectives. Msambichaka LA, Kilindo AAL, Mgema GD, ed. Dar es Salaam: University Publishing Press, 1996.
2. Contreras GR, Chan-Yeung M. Bronchial reactions to exposure to welding fumes. Occup Env Med 1997;54:836–9.
3. Keskinen H, et al. Chlorendic anhydride allergy. Allergy 2000;55(1):98–9.
4. Yokota K, et al. Occupational dermatitis from soldering flux. Ind Health 2004;42:383–4.
5. Rongo LM., et al. Occupational exposure and health problems in small-scale industry workers in Dar es Salaam, Tanzania: a situation analysis. Occup Med (Lond) 2004;54(1):42–6.
6. Rongo LM, et al. Respiratory symptoms and dust exposure among male workers in small-scale wood industries in Tanzania. J Occup Environ Med 2002;44(12):1153–60.
7. Rongo LM, et al. Exposure to wood dust and endotoxin in small-scale wood industries in Tanzania. J Expo Anal Environ Epidemiol, 2004.On line Pub 28 April.

Dr Larama M.B. Rongo
Community Health Department
School of Public Health and Social Sciences
Muhimbili University College of Health Sciences
P.O. Box 65015
Dar es Salaam, Tanzania.
E-mail: rongolmb@yahoo.com

Table 1. Self-reported allergic symptoms (%) in the previous month among 600 small-scale industry workers who participated in the information dissemination workshops in Dar es Salaam in April 2004.

Allergic symptoms	Office workers N= 300	Welders N= 115	Painters N=95	Woodworkers N=270	Metalworkers N=120
Runny nose >1/week	10.0	90.0	95.0	78.6	39.7
Itchy skin >1/week	5.0	29.7	20.0	56.8	75.4
Itching, watering eyes >1/week	15.0	81.2	35.0	66.5	75.4
Ear irritations	3.0	9.9	26	49.0	57.4
Chest and throat pains	20.0	71.3	60.4	80.0	90.0

Occupational allergy in the seafood processing industry

M.F. Jeebhay
SOUTH AFRICA


Workers in a fish processing factory are exposed to various allergens in bio-aerosols and fish juice.

"Seafood" refers to any aquatic organism that is intended for human or animal consumption (1). Recent years have seen a growing demand for seafood, which has led to increased production. While adverse reactions (toxic and allergic) to seafood have been reported by a growing number of consumers, allergic reactions in particular have also been documented to occur in the occupational setting as a result of exposure to all three major seafood groupings (Table 1 below) (2,3).

The seafood industry and working populations at risk

Occupational exposure to seafood allergens occurs mainly in the food and fishing industry (4,5). Workers in a number of these industries are exposed to seafood, especially those involved in either manual or automated processing of crabs, prawns, mussels, fish and fishmeal. Other occupations associated with seafood exposure include oyster shuckers; laboratory technicians and researchers; jewellery polishers; restaurant chefs; fishmongers and fishermen (1).
The Food and Agriculture Organisation of the United Nations (FAO) estimates that between 1970 and 1990, the number of people engaged in fishing, aquaculture and related activities doubled from 13 million to 28.5 million worldwide (6). Among these workers 52% worked aboard fishing trawlers, 32% were involved in aquaculture production (marine and freshwater) and 16% worked inland as capture fishers or other land-based activities, such as processing. In 1990, 95% of the world fishers and fish farmers were from developing countries, producing 58% of the 98 million tons of world fish. In many countries, labour in the fishing industry tends to be divided along gender lines with men almost exclusively going out to sea to catch the fish and women doing the majority of on-land processing (7). Most of these workers are seasonal workers. The degree of exposure is likely to be highest during the harvest season, when most of the processing occurs.
Seafood processing plants vary in technology levels, with some of the smaller workplaces relying entirely on manual handling of the seafood and larger companies using modern highly automated processes. There is great variation in processing procedures for the different types of seafood (5). Common processing, techniques employed for the major seafood groupings and sources of potential exposure to seafood product/s are outlined in Table 2. There is great variability of exposure within and among various jobs involved in seafood processing with reported allergen concentrations ranging from 1 to 5,061 ng/m^3 (1).

Constituents of seafood

The allergic and inflammatory reactions to seafood experienced by workers in the seafood processing industry are the result of exposure to the seafood itself (Table 1) (muscle and connective tissue, exoskeleton, blood, endolymph fish juice, skin, skin slime/mucin, gut) or to the various non-seafood components present in the product. Such non-seafood components include various contami-

Table 1. Classification of seafood groups causing occupational allergies

Phylum	Class	Family (common name)
Arthropoda	Crustacea	Crabs, lobsters, prawns, shrimp
Mollusca	Gastropoda Bivalvia Cephalopoda	Abalone Clams, oysters, mussels, scallops Squid (cuttlefish)
Pisces (sub-phylum Chordata)	Osteichthyes (bony fish)	Salmon, plaice, tuna, hake, cod, herring, sardine, trout, anchovy, yellow fin

nants, such as parasites (e.g. *Anisakis simplex*); protochordates (e.g. *Hoya*) and algae (e.g. dinoflagellates-*Hematodinium*); coral and sponges (e.g. marine soft sponge and red soft coral); marine or bacterial toxins (e.g. histamine); chemical additives (e.g. sodium metabisulphite) and spices (e.g. mustard, paprika, flour additives, garlic); and hidden ingredients (e.g. casein) in canned or processed fish products.(1)

The production of seafood aerosols during processing has been identified as a potential high-risk activity for allergic sensitization by high molecular weight seafood proteins through inhalation. These processes include degutting, heading and cooking/boiling of fish, mincing of seafood, fishmeal milling/bagging and cleaning of the processing line and storage tanks with high-pressured water (5). Occupational asthma is commonly related to crustaceans (e.g crabs and prawns) and fishmeal production. Skin-related allergic symptoms may be due to direct contact with the actual seafood, vegetable additives (e.g. spices) or a systemic response to inhalational exposures. Occupational skin exposure occurs mainly as a result of unprotected handling of various fish and their products at various stages in the production process. Fish juice contains high molecular weight proteins (meat, skin, skin slime/mucin, gut); biogenic amines; histamine and cadaverine; degradation compounds in old fish; and digestive enzymes (pepsin and trypsin), all capable of causing adverse reactions in exposed individuals.

Table 2. Common processing techniques used for seafood groups that are potential sources of occupational exposure to seafood and their products

Seafood category	Processing techniques	Sources of occupational exposure to seafood product/s
Crustaceans		
Crabs, lobsters, crawfish	cooking (boiling or steaming), tailing lobsters, cracking, butchering and degilling crabs, manual picking of meat, cutting, grinding, mincing, scrubbing and washing, cooling	- inhalation of wet aerosols from lobster tailing, crab cracking, butchering and degilling, boiling, scrubbing and washing, spraying, cutting, grinding, mincing, prawn blowing, cleaning processing lines/tanks with pressurised water
Prawns	heading, peeling, deveining, prawn blowing (water jets or compressed air)	- skin contact from unprotected handling; hand immersion in water containing extruded gut material
Molluscs		
Oysters, mussels clams, scallops, abalone	washing, oyster shucking, shellfish depuration, chopping, dicing, slicing	- inhalation of wet aerosols from oyster shucking, washing - skin contact from unprotected handling
Finfish		
Various species	heading, degutting, skinning, mincing, filleting, trimming, cooking (boiling or steaming), spice/batter application, frying, milling, bagging	- inhalation of wet aerosols from fish heading, degutting, boiling - inhalation of dry aerosols from fishmeal bagging - skin contact from unprotected handling

Allergic health effects associated with seafood

Occupational seafood allergy can manifest as rhinitis, conjunctivitis, asthma, urticaria, and protein contact dermatitis (Table 3) (1). Systemic anaphylactic reactions have also been reported (8). Another condition known to be associated with occupational exposure to seafood is extrinsic allergic alveolitis (9). The overall proportion of adult asthma (new and reactivated disease) attributable to occupational exposure is estimated to be 10% (10). The reported prevalence of occupational asthma among seafood workers varies from 7 to 36% (1).

The major skin manifestations associated with seafood are contact urticaria and eczematous contact dermatitis of various types (1). Contact urticaria is associated with direct contact with raw seafood proteins. At least 75% of eczematous dermatitis in the fish-processing industry are of an irritant nature commonly due to contact with water and fish products (fish juice, slime, skin, fillet) (11). Contact with the proteinacious material, such as seafood also causes a chronic recurrent dermatitis commonly known as protein contact dermatitis (PCD). However, biochemical sensitizers (e.g. garlic, onion, spices) added to seafood can also cause a delayed allergic contact dermatitis. In the seafood industry, the reported prevalence of occupational protein contact dermatitis (PCD) is between 3 and 11% (1).

Findings of South African study investigating occupational fish allergy

The South African seafood industry employs over 28,000 mainly seasonal women workers involved predominantly in bony fish (hake, pilchard and anchovy) processing activities (5,7). This study investigating the risk of occupational allergy associated with pilchard and anchovy processing on the west coast of South Africa found that workers were at substantial risk of inhaling aerosols containing fish antigens that resulted in an increased risk of developing occupational asthma. High fish antigen levels were encountered during fishmeal production and bagging activities (12). The study also found that workers were at risk of developing occupational allergies, with rhino-conjunctivitis being more prevalent than asthma and protein contact dermatitis or urticaria (13). A dose-response relationship was demonstrated between the ambient level of fish antigen exposure at the time of symptom onset and the risk of such work-related asthma symptoms. With respect to skin problems, workers with recurrent skin symptoms were more likely to be involved in canning/jetty activities, which are associated with high level of skin contact with fish and fish products. These workers were also more likely to have positive skin reactivity to fish on skin prick testing. The findings of this study will add to the growing body of evidence on occupational allergy among fish processing workers (14).

Prevention of occupational seafood allergies

In the light of the findings in the South African study reporting substantial exposure to fish antigens and related adverse health outcomes, it is evident that preventive measures need to be instituted in order to reduce morbidity and other adverse social outcomes (e.g. workplace absenteeism, job loss, decreased productivity, loss of earnings, increased health care expenditure) associated with occupational asthma and dermatitis

Table 3. Occupational allergies associated with seafood

Pathological mechanism	Occupational disease outcomes
General systemic response	Anaphylaxis (rare)
Allergic/toxic inflammatory *lung* reactions	Rhinitis, conjuctivitis Asthma Hypersensitivity pneumonitis (extrinsic allergic alveolitis)
Allergic/toxic inflammatory *skin* reactions	Urticaria, angioedema and protein contact dermatitis Contact irritant dermatitis Contact allergic dermatitis

among fish processing workers. Firstly, *regulatory exposure standards* for fish allergens should be developed in the long term since none currently exist internationally. This requires standardization of immunoassays for the evaluation of allergen exposure that can be implemented by most laboratories. In the meantime, the most practicable strategy would be to identify departments and activities with high aerosol exposure (fishmeal bagging, gutting machine) during the initial risk assessment process. Baseline and follow-up exposure measurements can be used to assess the effectiveness of local extraction ventilation systems using total particulate as a proxy for fish allergen levels (since there exists some degree of correlation between these two measures).

Employer compliance and law enforcement of the Regulations for Hazardous Biological Agents (HBA) under the Occupational Health and Safety Act (OHSA) in South Africa are also crucial to this strategy (15,16). Key aspects of this standard, which also applies to food processing plants, include:

- regular biennial risk assessment and categorization of workplace by employers
- employees to follow safe procedures for HBA disposal and decontamination and to report all incidents of accidental exposure to HBA
- employer to provide information and training to employees on potential risks of HBA and risk reduction measures
- regular exposure monitoring and medical surveillance of employees
- workplace health and safety committee approved protocol for procedures dealing with abnormal results
- a requirement to follow the hierarchy of control measures using standard and transmission-based precautions.

Secondly, *workplace interventions and control measures* need to be implemented to reduce the emission of bioaerosols in fish processing plants. These should include process separation or enclosure and the use of local extraction ventilation systems to processes and equipment (gutting machine, steam exhaust box and fishmeal bagging) are areas/activities needing special emphasis. Workplace practices such as broom sweeping, especially in the fishmeal bagging plants, should be prohibited and replaced by vacuum cleaners or wet mopping. Where there is significant potential for skin contact with the hazardous agent (fish sorting, spice mixing), appropriate gloves (cotton-lined to prevent excessive sweat retention) with long plastic sleeves should be worn. Puncture wounds and lacerations should be treated expeditiously to prevent infection and skin exposure to allergens in fish juice. An appropriate combination of emollients and moisturizers can be used prophylactically to protect skin barrier function and help prevent the development of irritant contact dermatitis (5).

Thirdly, ongoing *occupational hygiene and medical surveillance* are required to assess the effectiveness of interventions. Although exposure monitoring of total dust particulate as opposed to allergen levels has its limitations in that dust levels may only partially correlate with the actual allergen concentrations, it may be the only realistic exposure indicator to measure. For this as well as other reasons, medical surveillance programmes have an important role to play. Such programmes should include annual symptom screening questionnaires, skin prick testing with fish extracts and clinical skin examination. Where these screening activities offer evidence of possible work-related health problems, additional tests (e.g. spirometry and challenge tests, skin patch tests with fresh fish) can be used to confirm the presence of adverse health outcomes, such as occupational asthma or contact dermatitis.

The following guidelines used for the management of other occupational allergies could be used to deal with abnormal results obtained from medical screening, surveillance and individual case management:

- asthmatics sensitized to seafood should change to non-seafood work
- asthmatics without sensitization to seafood should be relocated to less exposed seafood tasks
- workers with rhinitis and sensitization should be investigated closely, and relocation to less exposed tasks should be considered
- workers sensitized to seafood but without respiratory symptoms should be re-examined annually
- workers with rhinitis only but without sensitization to seafood allergens do not warrant re-examination unless symptoms worsen.

Finally, *education and training programmes* for employers, workers and occupational health service providers are also needed. Essential components of such programmes should include knowledge of allergic disease endpoints, competence and skills to monitor and prevent them, as well as provision of information for those workers at risk in the fish processing industry.

References

1. Jeebhay MF, Robins TG, Lehrer SB, Lopata AL. Occupational seafood allergy: a review. Occup Environ Med 2001;58(9):553–62.
2. Lopata A, Potter P. Allergy and Other Adverse Reactions to Seafood. Allergy Clin Immunology Intern; 2000;12(6):271–81.
3. Lopata AL, Jeebhay MF. Seafood allergy in South Africa – studies in the domestic and occupational setting. Allergy and Clinical Immunology International 2001;13:204–10. (http://www.acii.net/issues/20015re2.pdf)
4. Jeebhay MF. Occupational allergy and asthma among food processing workers in South Africa. Afr Newslett on Occup Health and Safety 2002;12(3):59–62.
5. Jeebhay MF, Robins TG, Lopata AL. World at Work: Fish processing workers. Occup Environ Med 2004;61(5):471–4.
6. International Labour Organisation. Safety and health in the fishing industry. Geneva: ILO, 1999.
7. Jeebhay MF, Lopata AL, Robins TG. Seafood processing in South Africa: a study of working practices, occupational health services and allergic health problems in the industry. Occup Med (Lond) 2000;50(6):406–13.

8. Malo JL, Cartier A. Occupational reactions in the seafood industry. Clin Rev Allergy 1993;11(2):223–40.
9. Avila R. Extrinsic allergic alveolitis in workers exposed to fish meal and poultry. Clinical Allergy 1971;1:343–6.
10. Blanc PD, Toren K. How much adult asthma can be attributed to occupational factors? Am J Med 1999;107(6):580–7.
11. Halkier-Sorensen L. Occupational skin diseases. Contact Dermatitis 1996;35(1 Suppl):1–120.
12. Jeebhay MF, Robins TG, Seixas N, Baatjies R, George DA, Rusford E, Lopata AL. Environmental exposure characterization of fish processing workers in South Africa (abstract 2.1). X-2004 Conference on Exposure Assessment in a changing environment. Tijdschrift voor toegepaste Arbowetenschap, S(02),1, 2004.
13. Jeebhay MF, Robins TG, Lopata A, Lehrer S, Malo JL, Bateman E, Rees G, Miller M, Molekwa J, et al. Occupational seafood allergy and asthma in South Africa (abstract 083). La Medicina del Lavaro 2002;93(5):426.
14. Jeebhay MF. Occupational allergy associated with saltwater bony fish processing in South Africa. Doctor of Philosophy (Occupational Health) Thesis: University of Michigan, 2003.
15. Jeebhay MF. Health and safety legislation and worker's compensation for allergic diseases of occupational aetiology. Current Allergy and Clinical Immunology 2000;13(3):4–8.
16. Jeebhay MF. An approach to hazardous biological agents in the workplace – legal provisions and practical considerations. Occupational Health Southern Africa 2002;8(2):8–13.

Mohamed F Jeebhay
Associate Professor
Occupational and Environmental Health Research Unit
School of Public Health and Family Medicine
University of Cape Town
Room 4.44, Fourth Level, Falmouth Building
Anzio Road, Observatory, 7925
South Africa
Tel:27-21-4066309/6300
Fax:27-21-4066163
e-mail:
mjeebhay@cormack.uct.ac.za

Pesticide labels and risk reduction in developing countries

E.E. Lekei, F.T Mununa, A.B.Uronu
TANZANIA

Introduction

Pesticide labels contain specific information that is of interest at various pesticide handling stages. It is said that a pesticide label is a legal document recognized by courts of law (1). It is the user's responsibility to read and understand the label when buying, using, storing or disposing a pesticide. The labels must be properly affixed to the package, and the text must be clearly visible and readable by ordinary people under normal conditions (2).

The instructions given on labels are very important for protecting handlers against exposure and for protecting consumers against products treated with pesticides. The instructions are useful for physicians, for the purposes of diagnosis and treatment in the case of poisoning. They are also useful for minimizing direct damage to plants as a result of pesticide treatment. In addition, labels give specific instructions on the protection of domestic animals, wildlife, aquatic organisms and the environment (2).

In Tanzania, labelling is mandatory for all pesticides on the market. According to section 20 subsection 2 of the Plant Protection Act (PPA 1997), which is responsible for the control of pesticides in the country, dealers who deal with products with substandard labels face severe penalties. Dealers who contravene section 20 of the Plant Protection Act of 1997 are liable to a fine of not less than USD 2,000 but not exceeding USD 10,000, or imprisonment of not less then three years, or both fine and imprisonment (3,4).

General details for a pesticide label

Trade name

This is a commercial name assigned to a specific pesticide product. A single active ingredient in pesticides may be marketed at the same time under several different trade names by different companies. A specific trade name will identify a product as being produced by a specific manufacturer. Trade names are the ones used in advertisements, by company representatives and pesticide dealers.

Ingredient statement

Every pesticide label must indicate the type of active ingredient (common name) and its amount. An active agent is a substance that is biologically active in the formulation. The common name is followed by the chemical name, which is a complex name that identifies the chemical components and structure of the pesticide. The toxicity of a pesticide

Photo by J. Senyeye

It is the user's responsibility to read and understand the label when buying, using, storing or disposing a pesticide.

is directly related to the nature of the chemical it contains. An inert ingredient is any substance, other than the active ingredient, which is intentionally included in a pesticide formulation to facilitate handling and use. Some examples of inert ingredients include solvents, stabilizers, spreaders or stickers, preservatives, surfactant, deformers, etc. Inert ingredients are confidential information and are therefore not stated on the label. However, their percentage in the composition of the total formulation is indicated on the label.

Type of formulation

Pesticide labels must indicate the product's type of formulation. This is spelled out and designated by an abbreviation, such as WP for wettable powder, D for dust or EC for emulsifiable concentrate. The type of formulation provides insight about the type of application equipment that will be needed and any hazards associated with product handling.

Net weight or measures of content

The product net content on the label is often expressed in weight or volume units; that is, in kilograms, grams, litres, or millilitres; or, in some cases, as the number of tablets or pellets. Information about the net content assures users that the product is being supplied in the right quantity.

Product owner.

The name and address of the manufacturer, registrant or formulator who makes the product must be printed on the label. If the registrant's name appears on the label and the registrant is not the manufacturer, this must be indicated by appropriate wording, such as "packed for...", "distributed by...", or "sold by...". The details are important for follow-up of the product if a need arises.

Registration number and registration classification

The registration number is proof that the label and the products are approved by the responsible Designated National Authority. In Tanzania, for example, the registration numbers are designated based on the target pest, e.g. IN/0001 (Insecticide No 001), HE001 (Herbicide No 001), RO 0001 (Rodenticide No 001), etc.

Pesticide uses are classified on the basis of hazards, the intended use, and the effect on the environment. Some pesticides are registered for "general use", while others are registered for "restricted use" or "experimental use". Pesticides under "general use" category are less likely to harm the user(s), non-target species and/or the environment when used according to the label instructions. "Restricted use" pesticides have a greater potential to harm non-target species, users or the environment in particular when they are not handled as directed. Pesticides in the "experimental category" are for scientific investigations only. They are not authorized for general use.

Photo by J. Senyeye

The instructions given on labels are very important for protecting handlers against exposure and for protecting consumers against products treated with pesticides.

Directions for use

These instructions provide the rate of application, the site of application, the intended use, the pests controlled, mixing directions, time and duration of application, and the necessary application equipment. Other details are the harvest interval, especially if the product is to be used on crops or vegetables in order to reduce health hazards. The waiting period must specify the safe period when the treated animals can be slaughtered for consumption, grazing of the treated area, feeding of the treated produce to domestic animals and utilization of produce, e.g. milk, eggs, etc for human consumption. The waiting period after application may vary with the type of product, target crop, the amount applied, and so on. Generally, failure to follow the instructions for use found on a pesticide label can result in serious health risks to humans, non-target organisms and the environment.

Signal words and symbols

Each label must display a prominent signal word that indicates the relative toxicity of the active ingredient to humans and other species. The signal words give the user an indication of the risk involved in a respective pesticide. A signal word is displayed in capital letters on the front panel of the label, to indicate approximately how toxic the pesticide is to human health and environment. The signal or symbol words are based on the entire contents of the product, including its active ingredient and inert ingredients.

The three common signal words used in order of decreasing toxicity are:

(i) Danger (WHO Class Ia & Ib) – This word signals that the product is highly toxic by any route of entry into the body. All highly toxic pesticides that are very likely to cause acute illness through oral, dermal, or inhalation exposure are marked with "DANGER" as their signal word, together with the word POISON, printed in red and with the skull-and-crossbones symbol.

(ii) Warning (WHO Class II) – This word signals that the product is moderately toxic through oral, dermal, or inhalation exposure, or it causes moderate eye or skin irritation.

(iii) Caution (WHO Class III) – This word signals that the product is slightly toxic through oral, dermal or inhalation exposure, or it causes slight eye or skin irritation.

Precautionary statements

The precautionary statements are designed to provide information regarding the product toxicity, irritation and sensitization hazards associated with its use, as well as treatment instructions and information to reduce exposure potential. The precautionary statements include personal protective equipment, engineering controls, user safety recommendations, environmental hazards, and physical or chemical hazards. These statements guide the applicator in taking proper precautions to protect humans or animals that could be exposed.

Statement of practical treatment

First aid treatment instructions are recommended in this section in case overexposure or poisoning should occur. These instructions are very concise and they must be read before the product is used. For example, a statement may read: "In case of contact with the skin, wash immediately with plenty of soap and water." The label contains details describing the appropriate medical procedure for treating poisoning cases, and may indicate a relevant antidote.

Environmental hazard statement

This section provides the nature of potential hazards and precautionary statements providing warning on the potential hazards of the product to the environment from transport, use, storage, or spillage of the product. The hazards may be posed to water, soil, air, beneficial insects, domestic animals, plants, and wildlife. Generally, the information contained in this section is based on the results of acute toxicity studies performed on the technical grade of the active ingredient(s) and the formulation.

Some general statements appear on practically every pesticide label. For example, most pesticide labels will warn the user to avoid water contamination during application, the washing of equipments and during disposal. This section will also indicate whether the product is a threat to groundwater. Some labels will mention the potential risk involved to specific species. Special warning statements on the label reflect environmental protection; examples are:

- "This product is highly toxic to fish"
- "Do not allow drift to contact non-target plants or trees"
- "Do not apply when run off is likely to occur"
- "This pesticide is highly toxic to aquatic invertebrates and wildlife."
- "Birds in treated areas may be killed."
- "This product is highly toxic to bees exposed to direct treatment or residues. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treated area".

Re-entry statement

Pesticide labels contain a precaution to protect people after pesticide application. This statement indicates how much time must pass before a person can re-enter a treated area without appropriate protective clothing.

Storage and disposal statement

Upon purchase, the storage of pesticide and the disposal of the empty container are important responsibilities. It is advised to use the best storage and disposal guidelines for the specific situation and location. Pesticide should be stored securely, preferably under lock and key, and separately from food and feed supplies. The labelling information about storage generally includes suitable weather conditions. In many cases, minimum and maximum storage temperatures will be provided. Some pesticides become ineffective if not stored under suitable temperatures. Information about storage usually includes such general statements as "Do not contaminate feed, foodstuffs or drinking water" and "Store in original containers only" (1). Instructions for proper disposal of unwanted product and empty containers are also provided on the label, in order to minimize risks which may arise from inappropriate disposal.

Physical or chemical hazards

This section of the label describes any special fire, explosion or chemical hazards the product may pose. For example, it will have a notice if the product is so flammable that special care must be taken to keep it away from heat or open flame, or if it is so corrosive that it

Table 1. Common pictograms used on pesticide labels

 Keep locked away and out of the reach of children	 Extremely toxic	 Measurement	 Spraying
 Wear gloves during handling	 Protect the eyes and face during handling	 Wash the hands and body after handling	 Wear an apron for the whole body
 Wear gumboots during handling	 Wear a dust respirator during handling	 Wear a chemical resistant respirator during handling	 Wear coveralls during handling
 Dangerous/Harmful to livestock and poultry	 Protect aquatic organisms	 Harmful	 Explosive
 Dangerous for the environment	 Corrosive	 Explosive	

must be stored in a corrosion-resistant container. The product labelling will identify physical and chemical hazards by means of a designated symbol, while other labelling may list the hazards under the signal words and symbol.

Pictograms and colour codes

Pictograms are pictures used on labels to convey the message without words. The set of pictograms commonly used for pesticides has been devised by FAO/GIFAP with the aim of communicating the safety information to pesticide users and handlers in different countries with varied level of illiteracy. These pesticide pictograms include storage, activity, advice and warning pictograms. Use of the symbols and pictograms on product labels is encouraged, since they serve to enhance the understanding of the accompanying text (Table 1 on previous page).

Other warning symbols on pesticides and other chemicals indicate the kind of harm that can result from misuse or mishandling. They alert the user to the degree and type of hazard involved (Table 1).

Colour codes are used on pesticide labels to communicate the toxicity class and the extent of risk involved in the specific product. FAO has introduced a colour coding scheme based on the WHO classification of pesticide hazard. The relevant colour band is shown on the pesticide label in accordance with local regulations (5). In Tanzania, for example, the colour bands are usually placed below the pesticide label surrounding the pictogram box. The colours involved are:

- **Red** (WHO Class Ia & Ib) – Extremely hazardous,
- **Yellow** (WHO Class II) – Highly hazardous,
- **Blue** (WHO Class III) – Slightly hazardous and
- **Green** – Unlikely to cause hazards.

Conclusions and recommendations

The information provided on the pesticide label is very useful for safer handling and therefore health risk reduction. Unfortunately, some end-users fail to take note of such information, in particular the warning symbols and pictograms. This results from reluctance to read the label, ignorance, too small fonts on the pesticide label, the inability of some end-users to read and write, the use of complex language, and, in some countries, lack of pesticide legislation. For these reasons, the information on the label is not properly communicated to some end-user target-groups. The consequence is poor handling resulting in health risks and environmental pollution. Non-target organisms, e.g. wildlife, fish, and beneficial organisms, are also at risk of poisoning by pesticides as a result of poor handling practice. There is therefore a need to:

i) Arrange awareness campaigns on interpretation of pesticide labels among end-users.
ii) Conduct training and seminars on the interpretation of labels, for farmers and the community.
iii) Produce and distribute educational materials regarding pesticide labels, for farmers and the public in general.
iv) Ensure that pesticides are appropriately labelled in simple and clear language.
v) Introduce and enforce pesticide legislation.
vi) Evaluate the warning symbols and to design local ones fitting the local environment.
vii) Introduce severe penalties against handlers who fail to abide by label instructions.

References

1. Fishel F, Andre P. Understanding the Pesticide Label. October 2001. University of Missouuri, Extension – Columbia.
2. Pesticide labelling legislation. Food and Agriculture Organization of the United States (FAO), Rome Italy. 1988.
3. Plant Protection Act 1997 – Acts supplement to the Gazette of the United Republic of Tanzania No 27 Vol 78 of 4th July 1997.
4. Plant Protection Regulations 1999 – Made under section 42 of the Plant Protection Act of 1997.
5. Guidelines on Good Labeling Practice for Pesticides. Food and Agriculture Organization of the United States (FAO), Rome Italy. 1995.
6. Rother HA, London L, Maruping M, Miller S. Hazard Communication for Pesticide Safety in Developing Countries: When Is the Message Adequate? 2002. http:www.soeh.org/files/London,75,w3.ppt.
7. FAO. International Code of conduct on the distribution and use of Pesticides. November 2002. Food and Agriculture Organization of the United States (FAO), Rome Italy.

Elikana E. Lekei,
Florence T. Mununa,
Asnath B.Uronu
Tropical Pesticides Research Institute
P.O. Box 3024
Arusha, Tanzania
E-mails: lekei@yahoo.com,
fmununa@yahoo.com,
auronu@yahoo.com

ILO News

Two important sources of lifesaving information are now freely available to the public on the ILO's website. The English version of the ILO Encyclopaedia of Occupational Health and Safety and the bilingual (English/French) CISDOC database were previously available only on subscription through partner institutions. Internauts are now invited to point their browsers at **http://www.ilo.org/encyclopaedia/** and **http://www.ilo.org/dyn/cisdoc/index_html** (underscore, not full stop, between "index" and "html").

Now in its fourth edition, the Encyclopaedia is a unique and widely respected reference. Its 1000 articles and copious illustrations have been available on paper, CD-ROM and the World Wide Web since 1998. But always at a price. Responding to calls from International Labour Conference Delegates and the ILO Governing Body to provide free access to more resources, the InFocus Programme on Safety and Health at Work and the Environment (SafeWork) has now made the Encyclopaedia the centrepiece of its "SafeWork Bookshelf", which presently also includes the ILO/WHO/UNEP International Chemical Safety Cards.

CISDOC is the fruit of 30 years of screening the occupational safety and health literature of the world for interesting and useful books, articles and audiovisual materials that occupational safety and health specialists can use in their fight against workplace accidents and diseases. It already guides users to over 62,000 publications, and 2000 more references are added every year.

The Encyclopaedia and CISDOC are still available from their long-time vendors. The two are searchable together on the World Wide Web at **http://www.ilocis.org**, and CISDOC is combined with other important occupational safety and health databases on CD-ROMs from the Croner unit of Wolters-Kluwer (UK) and from the Canadian Centre for Occupational Health and Safety.

An important tool is included with the Encyclopaedia and CISDOC: the CIS Thesaurus. This trilingual (English/French/Spanish) collection of terms is used by the ILO to index CISDOC references, and by a number of occupational safety and health libraries around the world to organize their collections. In the Internet age, it is a valuble source of "meta-data" for making Web pages easier to find.

Occupational health and safety in the Kenyan health sector

S.O. Afubwa, J. A. Hanshi
KENYA

Massive growth and development of health care systems at various levels have been achieved since independence in 1963. The Ministry of Health has the responsibility to ensure that accessible, affordable and effective health services promoting well-being, and sustaining and improving the health status of the Kenyan population, are made available. The Kenya Health Policy Framework that provides reform initiatives for future development of the health sector was formulated in 1994. In this policy, the area of emphasis is the promotive and preventive health care programme. The "Action Oriented Implementation Plan", which is the road map for Kenyan health reform initiatives, was derived from the policy framework by the Ministry of Health in 1996.

The Occupational Health and Safety Section in the Ministry of Health is an integral element of general health. The Section has received sufficient support from other stakeholders in spearheading all matters pertaining to the health of the general population. Currently the Section is in the forefront to ensure that psychosocial issues are made a priority in the provision of good-quality health care services. The Ministry of Health is on a course aiming to ensure that all places of work are free from illness and diseases. Steps undertaken to boost the effort include proper networking with Kenya Medical Training College, Department of Environmental Health in the Faculty of Public Health Sciences, which is offering the Higher National Diploma with Specialization on Occupational Health and Safety. The Institution is currently utilizing up-to-date information from various sources. The photos shown below depict various events that took place in 2003. The achievements made by the Occupational Health and Safety Section during the year 2003 include the following:

- The Head of the Section was trained at SOLVE events which took place in Johannesburg and Cape Town.
- Support was given for the Occupational Health and Safety Course in Kenya Medical Training College.
- Appreciating effects of unsafe handling of chemicals to human health and the environment, a specific module for chemical management was launched.
- Information about the importance of SOLVE (Psychosocial problems and approach to solve them) was given to serious and willing entrepreneurs.
- The Head of the Section was awarded a certificate on anti-corruption, ethics, governance and economic integrity by Egerton University in collaboration with the Kenya Anti-corruption Commission. This adds to credibility and helps to make sure that workers and employers work together in honesty and harmony.
- The Head of the Section actively participated in developing a curriculum on tobacco and its health effects for health care workers.
- Currently we are gathering data on obsolete chemicals in collaboration with the University of Nairobi and National Environmental Manage-

Photo by J. Karanja

Photo 1. Adequate strategic planning of occupational health and safety calls for teamwork and consultation. From left to right: Ms Amina (epidemiologist), Mr Afubwa and Mr Hanshi.

Photo by M- Mpumulanga

Photo 2. The Ministry of Health has taken SOLVE seriously, as indicated by the attendance of Mr Hanshi (front row, 3rd from the left), Head of the Occupational Health and Safety Section, at the SOLVE - *Psychosocial issues at workplace* training event held in Johannesburg and Cape Town in December 2002 and February 2003.

ment Authority, for the purpose of developing a National Chemical Profile for Kenya.

Objectives of the Six-year Plan of the Ministry of Health for 2002–7

1. Create awareness of the occupational health and safety management system
2. Enact occupational health and safety legislation
3. Commence and carry out worksite health promotion programmes
4. Compel industrial sectors to have in place a Health and Safety Officer/Manager
5. Promote and increase personnel trained in occupational health and safety
6. Introduce and encourage safety audits at workplaces
7. Monitor the installation of relevant warning or caution signs in workplaces
8. Encourage firms to utilize job safety analysis
9. Introduce and sustain short-term health and safety competency
10. Establish a database for health information related to occupational health and safety
11. Liaise with other countries, ministries, relevant agencies and professional experts in occupational health and safety
12. Attend national and international forums for, and make presentations at, occupational health and safety.

Strategy for 2004

- Cooperate with external institutions on occupational health and safety
- Enhance and establish cordial relations with other stakeholders
- Research undertakings in hazardous occupations such as fishing, logging, mining and construction with regard to areas of public health concern
- Network with relevant agencies, such as the National Environmental Management Authority, on matters pertaining to chemical safety
- Synchronize occupational health and safety efforts for effective delivery of quality health care
- Introduce chemical management for environmental health science students pursuing a Higher National Diploma in Occupational Health and Safety at Kenya Medical Training College.
- Improve the data collection and management of our health information system with regard relation to occupational diseases and disorders.

Samuel. O. Afubwa
Head, Department of Environmental Health
Kenya Medical Training College
P.O. Box 30195
Nairobi, Kenya

Jama A. Hanshi
Cordinator, Occupational Health and Safety
Ministry of Health - Kenya
Division of Environmental Health
Room 420
P.O. Box 30016 Cathedral Road
Nairobi, Kenya

Occupational health hazards among cement industry workers

F.C. Ezeonu
NIGERIA

Introduction

The rapid growth of the construction industry in Nigeria has resulted in an increased demand for cement. For instance, the demand for cement in Nigeria rose from 6.9 million tonnes in 1986 to 7.7 million tonnes in 1990 (1) and has risen beyond 10.0 million tonnes by 2000. Nigeria currently has about seven cement factories. Cement manufacture is associated with the generation of a great deal of dust, the inhalation of which may result in pulmonary and other respiratory diseases or disorders (2). The chemical components of this dust and the working conditions are cause for concern, as they may contain chemical toxicities.

Apart from observable harm including ventilatory problems (3, 4) and irritating and contact dermatitis (5), which abound in the literature, this work documents other work-related occupational injuries and illness associated with cement industries. The study propagates routine diagnostic tests for some organ-system functions, to be used as probes for detecting perturbations and pathological changes associated with occupational hazards in the cement industry. Work group and type of susceptibilities to hazards are also noted. The significance of the study is three-fold.

(i) It makes an inventory of current working hazards in the industry and provides relevant baseline data for policy-makers.
(ii) The diagnostic tests may be adopted in routine health screening of workers, for health audit purposes.
(iii) It establishes substantive evidence for estranged workers who may wish to sue for health hazard compensation.

Field Study

The study involved a survey of a cement workstation, health hazard evaluation, and the administration of a questionnaire to industrial workers on site as well as to field extension loaders in sale depots and outlets. The factory was chosen for the pilot study because of its proximity and logistics advantages. The workplace survey is highly observational – sensory examination for obvious signs of exposure reveals acclimation, airborne dust, and the accumulation of dust on machines and on the floor.

Health hazard evaluation studies involve checking employees' health, providing medical tests, and obtaining data about exposure and symptoms. The volunteers were selected from the different work areas – quarry, production/kilning, and the loading bay. The volunteers were all males aged between 20 and 58 years and were confirmed to be in good health by the company's doctor.

About 276 cement industry workers (including field extension workers and loaders) filled in the questionnaire. Questionnaires were filled in during face-to-face interviews and after translation into the local language. This was followed up by on-the-spot inspection observation for evident illness or symptoms, e.g. wheezing, phlegm, pulmonary congestion, lacrimation and dermatitis. All the subjects participated willingly after being assured that their identity would be protected.

Workplace hazards

The occupational hazards associated with cement work can be broadly classified into two: physical and chemical injuries.

Physical injuries

Physical injuries occur as a result of energy impact of a sufficient magnitude to alter or disrupt the function and/or structure of tissue. Workers reported physical injuries resulting from *mechanical* and *thermal insult*, while *pressure injury* was considered the rarest.

Mechanical injury

This results from accidents and carelessness. The spectrum of injuries produced by various circumstances of mechanical insult in the cement industry (as well as their frequencies) includes the following:

- Abrasion (scratch) 37.5%
- Contusions (bruises) 27.0%
- Incisions (cuts) 15.0%
- Penetration 6.5%
- Laceration (tears) 0.8%
- Fractures 0.2%

Additionally, various musculoskeletal conditions are associated with physical application of oneself on the job; e.g. low back pain and other aches and pains of the body.

Thermal injury

Workers in the kiln reported heat exhaustion caused by their exposure to high temperatures, which leads to excessive loss of fluid.

Pressure injury

This is associated with blast injury caused by explosions at the quarry sites. An air blast tends to produce a sharp pressure wave and may cause physical disruption of the ear drum and brain cells, often presenting as headache. Workers in the quarry commonly complained of headache which subsisted on workdays and disappeared on weekend or on days off. Prolonged proximity to the quarry may result in hearing loss (i.e. deterioration in hearing). This was apparent in very few workers, but due to lack of audiometric equipment, we could not precisely establish the extent of hearing loss among these subjects. The added hazard of missiles of solid material generated by the explosion was also reported.

Chemical injuries

As earlier noted, chemical components of cement dust and in the working conditions present the potential for chemical toxicities. The resulting pathological lesion may be either local or systemic.

Local actions

Local actions, limited to skin, eyes, **upper X tract** and upper gastrointestinal tract are caused by marked irritation upon contact of the chemical entity with tissue. Lacrimation (discharge of tears) is a common experience among the workers, particularly newcomers at the quarries and loading bay. Dusts are known generally to be lacrimatory agents.

Inhalation of dust over a long period of time gives rise to lung changes of a proliferative and fibrotic character. The term "pneumoconiosis" is used to describe the disease produced (6). Pneumoconiosis constitutes a serious occupational hazard in cement milling, mining and numerous other industries. A number of studies conducted in various parts of the world have demonstrated that cement dust has a significant influence on both lung function and the frequency of occupational-related symptoms among the workers directly exposed to cement dust (1,4,7). The lungs are the primary targets of dusts and other particulate matters, making pulmonary toxicity a highly possible hazard of cement milling.

Pulmonary function indices [spirometric measurements – forced expiratory volume (FEV); forced vital capacity (FVC) and peak expiratory flow rate (PEFR)] have been used to establish pulmonary toxicities (8). One such study, carried out in Nigeria by Alakija et al. (9) at a cement factory, showed that all these indices decreased with years of service, with some of the workers developing bronchitis.

The present study also supports the result of an earlier study (3) which showed that the prevalence of chronic phlegm among cement workers increased with tenure, whereas the prevalence of wheezing increased with both tenure and prevailing dust level. Other associated health problems or complaints include coughs, tightness of the chest, difficulty in breathing, stuffy nose, persistent colds, headaches, dizziness and fatigue. Most of these symptoms are highly reduced or disappear entirely during weekends or work-free days.

Besides the presence of high levels of oxides of alkali and other metals, cement dust usually contains small amounts of cobalt, nickel and chromium, all of which have been implicated in irritant and contact dermatitis (5). Contact dermatitis is found to be more prevalent among cement loaders than the rest of the work population.

Systemic actions

Toxicants absorbed into the circulation passes to different organs and tissues and finally into cells, where they interfere with cellular metabolism. The author and a co-worker (10) adopted routine diagnostic tests for some organ-system functions as biochemical probes in health screening of cement milling workers. The value ranges of some of these parametric indices among the different work groups are seen in Table 1.

Raised levels of serum bicarbonates (HC03-), aspartate transaminase (AST) and alanine transaminase (ALT) were observed among cement milling workers compared with a control population. Similar elevated values of serum bicarbonate (HC03-) have been reported in association with ingestion of alkali and chronic bronchitis (11). The results of this study correlate with earlier reports of bronchitis established in cement industry workers by Alakija et al. (9) and Akahara (1) using pulmonary function indices. While elevated bicarbonate values are associated with chronic bronchitis, elevated AST and ALT values suggest probable susceptibility to hepatitis. Hepatitis in this instance is of the anicteric type, as the elevated values of transaminase were not matched by a corresponding rise in serum bilirubin (10). Elevated bicarbonate values were found to differ statistically ($p>0.05$) between the quarry workers and the rest of the volunteer work populations. Similarly, elevated ALT values differed statistically ($p>0.05$) between the kilning workers and the rest of the study population.

Despite the best of efforts, we simply do not know yet the ultimate health costs of overexposure to cement dust. With

Table 1. The ranges of values, and the means of biochemical indicators of health hazards among different work groups in Nkalagu Cement Factory, Nigeria.

Biochemical parameters		Aspartate transaminase (AST)	Alanine transaminase (ALT)	Bicarbonate (HCO3-)
Normal range and unit		5–8 iu/I	3–15 iu/I	24–28 mmol/l
Control population (N = 10)				
	- range	5–10	4–8	21–28
	- mean	7.00 ± 1.56	6.90 ± 1.45	25.80 ± 2.15
Work group volunteers				
Quarry (N = 10)	- range	9–36	8–25	23–34
	- mean	22.70 ± 10.17	15.70 ± 5.08	29.60 ± 3.10
Kilin (N = 16)	- range	1–43	1–21	28–35
	- mean	18.75 ± 11.43	12.38 ± 5.46	31.63 ± 2.53
Loading bay (N = 9)	- range	5–60	7–31	28–33
	- mean	28.56 ± 18.65	17.22 ± 7.84	31.00 ± 2.00

reports and speculations of silicosis and cancer as consequences of chronic exposure to cement dust, and with the report that cement dusts contain a small amount of free silica and hexavalent chromium, reported to be carcinogenic (12), prolonged monitoring studies may reveal a wider spectrum of health hazard within the industry.

References

1. Akahara CO. A study of the respiratory disorders of cement factory workers at Nkalagu, Enugu State. A thesis for the FMCPH. 1994.
2. Theodore B. Effect of occupational exposure of dust on respiratory system of cement workers. J. Soc. Occp. Med. 1980;30:31–6.
3. Abrons HL, Petersen MR, Sanderson WT, Engelberg AL, Harber P. Symptoms, ventilatory function and environmental exposures in Portland cement workers. Br J Ind Med 1988;45(6):368–75.
4. Saric M. Occupational and environmental exposures and non-specific lung disease: a review of selected studies, Isr J Med Sci 1992;28(8-9):509–12.
5. Lachapelle JM. Industrial airborne irritant or allergic contact dermatitis. Contact dermatitis 1986;14:137–45.
6. Kjeldsberg CR. Chemical in injury. In Pathobiology: an Introduction, Minckler J, Anstall HB, Minckler TM (eds). The C.V Mosby Company 324–42p.
7. Oleu UG. Pulmonary function and scrumptious of Nigerian workers exposed to cement dust Environmental Research 1984;33:379–85.
8. United State National Research Council (USNRC). Biological markers of pulmonary toxicology. National Academy Press, Washington D.C 1989; 179PP.
9. Alakija W, Iywawe VI, Jarikve LN, Chiwuzie JC. Ventilatory functions of workers at Okpalla Cement factory in Nigeria. West African Journal of Medicine, 1990;9(3):187–92.
10. Ezeonu FC, Ezejiofor TIN. Bio indicator of occupational health hazard in Nkalagu Cement industry workers, Nigeria. The Science of the Total Environment, 1999;228:275–8.
11. Gray CH, Howorth PJN. Clinical Chemical Pathology. The ELBS, Edward Arnold Publishers Ltd, 9th ed. 1982;263–9.
12. Sofoluwe GO, Schraw R, Ogunmekan DA. (eds). Principal and practice of public health in Africa. Vol 1., 2nd edition, University Press Plc Ibadan, 1996;530pp.

Dr F. C. Ezeonu, Ph.D.
Dept. of Applied Biochemistry
Nnamdi Azikiwe University
P.M.B. 5025
Awka
Nigeria

The Gezira Tomb of Pesticides El-Hasahiesa - Sudan

A.O. Musa, S.M. Elhassan, A.A. Hussein
SUDAN

Introduction

The Gezira is the peninsula of fertile land between the Blue Nile and the White Nile (3.3 million feddan). It is backbone of Sudan's agricultural land, mainly utilized for cotton cultivation. In recent decades the cotton crop has had many diseases; this has necessitated the import of pesticides and intensive use of different pesticides has been recorded.

Pesticides have been stored in 14 warehouse stores, with the headquarters at Gezira. The central store is in the town of El-Hasahiesa, which lies 145 km south of Khartoum. During the 1980s[h] the yard of this store was full with a huge amount of expired and unused pesticides in drums and containers. As there was no provision for a scientific discharge system in the scheme for such pesticides, the Department of Crop Protection caused an environmental disaster in 1986 by dumping 500 tonnes of expired pesticides, mainly DDT, in the yard.

From that time on, this area has been known as **"The Gezira Tomb of Pesticides".** The disaster was clearly evident during the floods of 1988. During this period, unusual signs and symptoms were recorded in the store area: unusual

convulsions and deaths among children; abortions among pregnant women; atypical headaches; and others. Cattle and other animals died (25 cows died during one day). Deaths of frogs and other small animals were also observed (1).

Efforts have been made to control the situation. In 1989, the Plant Protection Department of the Gezira Scheme has constituted a national committee for discarding the remaining pesticide wastes contained in the store yard. The committee suggested two strategies for getting rid of expired pesticides: enclosing them in a highly scientifically designed store or burning these pesticides in suitable incinerators. The implementation of both strategies failed because of the high costs involved.

Alternatively another solution was tried. It consisted of surrounding and covering the tomb with a concrete wall that extends 150 cm under ground and 50 cm above ground, and then surrounding the store yard with a wall in order to control and prevent spilling that would pollute soil during rainy seasons (2).

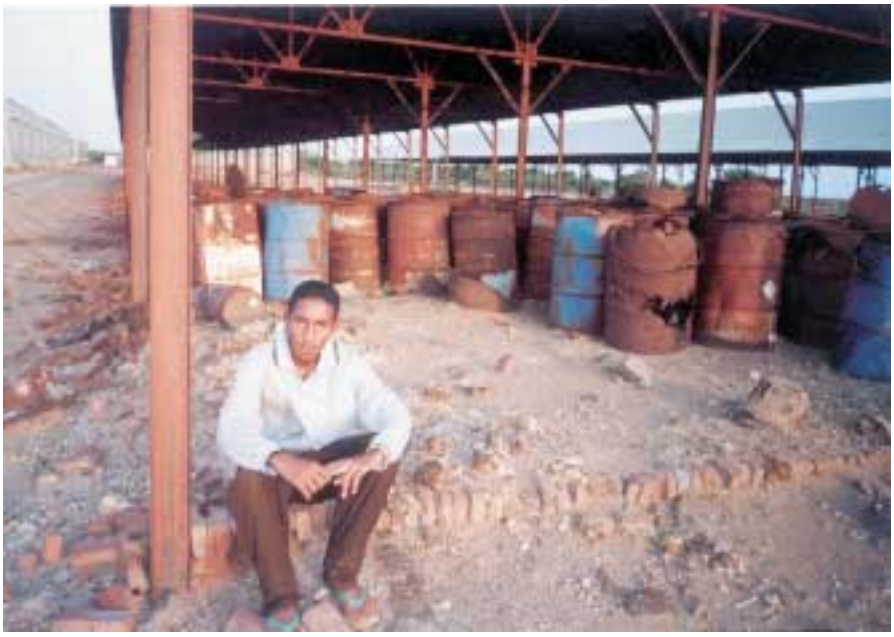
Material and methods

A Participatory Rapid Appraisal method was conducted by means of a multidisciplinary approach. It entailed individual interviews with the Gezira Scheme authority's local physicians and public health personnel at El-Hassahiesa health facilities, group discussions with the community (formal and informal leaders, households; male and female members), use of secondary data (previous researches, studies, etc.), and direct observation (1).

Results

The following facts and findings were revealed:

1. Central pesticide stores lacked scientific design, were not stored and packed systematically, nor are unused or expired pesticides handled scientifically and systematically.
2. Huge amounts of internationally prohibited DDT pesticide have accumulated in the other stores.
3. The tomb is seriously cracked.
4. There is weak awareness of the problem at both community and fiscal levels.
5. Children are playing around the area. Sometimes they use small amounts of pesticides for fishing, collecting dead fishes.
6. Large quantities of pesticides in the yard are stored in more than 120 barrels that are badly corroded by heat and rains, and would need to be repacked.



Large quantities of pesticides in the yard are stored in the open in more than 120 barrels that are badly corroded by heat and rains, and would need to be repacked.

7. The yard and surrounding soil (up to 400 metres) were highly polluted with these pesticides as a result of annual rain leaching these pesticides.
8. Usually rain water running from this area goes down directly to the Blue Nile River, which is about 1 km away from the store area.
9. There is a strong and repulsive smell in the whole area, which is surrounded by families' complexes.
10. Surrounding communities show some signs which may be due to exposure to pesticides: allergies, running nose, excessive sweating, etc. In addition, annually during the rainy season, pesticide poisonings of children and animals are recorded, caused by exposure to polluted rain water.

Discussion and conclusion

Exposure to pesticides resulting from unsafe use or storage poses a potential threat to human health. The long-term consequences of this exposure may often go unidentified (4). While industrialized countries have been taking significant steps to reduce pesticide use, the use in developing countries is on the increase (5). The pesticide use and storage dilemma in Gezira agricultural scheme is a flagrant example.

Lack of awareness of the health hazards of pesticides among Crop Protection authorities and farmers coupled with the high expense of solutions for disposal resulted in the environmental disaster of dumping the pesticides in yard stores. A large number of population groups, particularly children, already have long-term exposure to pesticides, the ill effects of which need to be identified.

Scientific research is required without delay in order accurately to assess the situation and to suggest and implement an appropriate intervention to control the situation. The following aspects should be studied and urgently addressed

1. proper correction and preventive construction of a tomb for the pesticides
2. construction of new stores that waterproof and soil-proof
3. formulation of a safe and cost-effective system of purchasing pesticides from abroad
4. design and implementation of a widespread awareness campaign focusing on farmers, the community and the authorities
5. encouraging research and innovations in order to discover new and better use of indigenous resources in sustainable agricultural production and for health maintenance (6).

References

1. Hanan A. Elamin. The impact of pesticides on the soil at El-Hasahiesa Area. (A thesis submitted for the degree of Master in Geography, University of Khartoum, 2001.
2. Issa A, et al. The Health Impact of Pesticides Spill from "Hasahiesa Tomb" on residents of the neighboring areas. The Sudanese Environmental Conservation Society, 1992.
3. Blacker F, Brown C. Alternative models to

guide the design and implementation of the new information technologies. Journal of Occupational Psychology. 1986;594:267,313.
4. Alborg W. Public health impact of pesticides used in agriculture – WHO, Geneva 1990.
5. Wesseling C, Rupert C, Cherri F. Safe use of pesticides: A developing country's point of view. In: Encyclopedia of Pest Management. 2003. P 1–14. Marcel Decker Inc.
6. Ngowi AVF. A study of farmers knowledge, attitude and experience in the use of pesticides in coffee farming. Afr Newslett on Occup Health and Safety, 2003;13(3):62–4.

Dr Abdelmageed Osman Musa
International University of Africa
Faculty of Medicine and Health Sciences
P.O. Box 2469
Khartoum
Sudan

6th International Scientific Conference (IOHA 2005),

South Africa, September 2005

Sponsorship

The Organising Committee for IOHA 2005 is pleased to receive applications from persons in African countries who would like to be sponsored to attend:
A one week Fundamentals of Occupational Hygiene course at the Tshwane University of Technology, Pretoria, South Africa, 12–16 September 2005 and IOHA 2005 (19–23 September 2005).

Persons should apply who are working in the OHS field or who are interested in the discipline of occupational hygiene and feel they would benefit from attending the fundamentals course in occupational hygiene and IOHA 2005.

Only those who cannot obtain alternative funding (e.g. through their own organisation or other sponsor in their country) should apply.

To apply for sponsorship, email a copy of your CV and a Motivation (minimum of a half A4 page of text) as Word doc attachments to: ioha2005@asosh.org

Send by e-mail your information: First Name, Surname (Family Name), Email Address, Telephone, Fax, Institution and Postal Address. Alternatively send by Fax or mail the above information to the Conference Secretary.

Conference Secretary: Tracy Brighton, IOHA 2005 c/o MVS, PO Box 93480, Yeoville 2143, South Africa Tel/ Fax/ TAD: +27 11 487 1073, Email: minevent@global.co.za
Web: http://www.saioh.org/ioha2005/

Does safety and health at the workplace matter?

T. Ghebreyohannes
ERITREA

Introduction

In order for a country to have globally competitive industrial products, first of all, it should have well-established industries with a conducive work environment and decent work. The country should also give credence to workers' safety and health of workers as an element of human rights. In the world today, there are countries that have well-designed occupational safety and health policy, regulations, and standards, but their implementation is poor. There are also countries that have outdated occupational safety and health policies, regulations, and standards, which are in need of revisions and amendment. These problems are common among the African countries. Eritrea is no exception; there are labour laws, but they do not give pay much attention to workers' safety and health. They do not allocate enough human and materials resources to allow the prevention of occupational accidents and diseases at the workplace. In consequence, many countries – including Eritrea – suffer considerable economic losses caused by occupational injuries, diseases, lost production, damaged property and damaged assets rather than developing the infrastructure of occupational safety and healthy at the workplace in particular, and the infrastructure of public health, roads, schooling in general. The purpose of this study is, therefore, to show the importance of safety and health at the workplace.

Background

Eritrea is a young and small country at the Horn of Africa, with a land area of about 124,320 square kilometres and an estimated population, according to Brixiova et al (1) , of about 3.9 million. After a protracted war with Ethiopia, Eritrea gained its independence in May 1991, and two years later, following a referendum, the country was formally declared an independent state. The Eritrean economy, like that of many developing countries, relies on agriculture.

The Italians and the British, consecutively, had colonized Eritrea for nearly 60 years before it was colonized by Ethiopia. During this period, Eritrea was relatively industrialized. In the 1940s, despite its small population of less than 700,000 people, the country had more than 2,000 industrial firms and almost 3,000 commercial firms Ameberg M, Pederson J. (2).

During Italian colonization, Eritrea had various labour laws for managing or regulating industrial firms. The Italians had labour legislation in Eritrea; for example, Government Decree No. 181 of 1903 which regulated labour conditions. However, all these laws gave priority to the protection of Italians resident in Eritrea.

The period of Italian colonization was followed by the British Administration in Eritrea, which had its own labour proclamation. Although these laws were to the benefit of foreigners, they were a little better than the Italian legislation because in 1946 they included accident insurance for Eritreans.

The Government of Eritrea proclaimed the Employment Act of 1958. This was a comprehensive Act, but it was not valid long. It was succeeded by Ethiopian colonialism and Proclamation order No. 37 of 1964, which was the first labour law concerning labour inspection. Legal notice No. 302 of 1964 covered minimum labour condition and Proclamation No. 232 of 1966 covered safety and health. Labour Proclamation No. 64 of 1975 was in force until Eritrea's independence.

Table 1. Accidents reported in Eritrea in 2003, by consequences

Establishments filing reported	Workers employed in the establishments (N)			Consequences (N)			Accidents (total)	Working days lost (N)
	Male	Female	Total	Temporary incapacity for work	Permanent disability	Death		
52	5,705	2,914	8,619	516	27	8	551	61,751

Source: Ministry of Labour and Human Welfare 2003

Eritrea had been under colonization by different countries for more than 100 years. After a 30-year armed struggle for independence, Eritrea gained its independence on 24 May 1991. The country then came up with a new transitional labour law No. 8/1991.

Challenges facing the Inspectorate

Most of the big industrial firms in Eritrea were established during Italian colonization. They served for more than 60 years. The buildings are very old and do not fulfil acceptable safety and health standards. These buildings, for example, have poor lighting and ventilation, there are no emergency exit doors, the welfare and sanitary facilities, if any, are old or no longer in use and the machineries are outdated or improperly installed, unguarded and produce high noise levels.

During Ethiopian colonization, especially under the Derghi administration, the government confiscated all these industrial firms. This accelerated the pace at which the establishments wore out for lack maintenance, nor was any renewal of the machinery or buildings undertaken with a view to occupational safety and heath. Furthermore, when Eritrea was under colonization, technology was transferred from industrialized countries to Eritrea without any consideration for occupational safety, health and working conditions. Investors brought in technology based on economic or technical criteria only. There were no occupational safety and health inspections at any stage: at the very beginning when an establishment was planned on paper, it was not checked whether it accommodated the necessary safety and health infrastructure; when construction was in progress, it was not monitored whether the construction work was done according to the plan as far as safety and health were concerned; and during machinery installationm no technical advice on safe installation was given to the employer.

Because of globalization and interconnectedness as well as the code of investment of Eritrea, industrialization is growing very quickly in Eritrea. Despite its importance to economic development, the situation increases workers' exposure to hazardous chemicals and dangerous machinery, and the external environment is also exposed to hazardous chemical waste.

Lack of adequate information concerning occupational safety and health and lack of qualified inspectors have been other drawbacks to the effective and efficient implementation of occupational safety and health legislation.

Cost of occupational injuries and diseases

The total costs of all individual occupational injuries and diseases affect the national economic growth because employers, instead of using the income or profit for the development of their enterprise and the wellbeing of the workers, pay compensation to workers who were injured or contracted ill health at work. As Dr. Jukka Takala clearly stated at the World Congress on Occupational Safety and Health in Sao Paulo, Brazil:"It is worse than war at work."(3) Each year more than 1 million workers die from work-related causes worldwide, and hundreds of millions more are harmed by their jobs. The annual total of 1.1 million workplace deaths exceeds the average annual death from road accidents (999,000), war (502,000), violence (563,000), and HIV/AIDS (312,000). Dr Takala added that:

- Every year 250 million accidents occur, causing absence from work. This equals 68,300 accidents every day, 475 accidents every minute, eight accidents every second.
- Working children suffer 12 million occupational accidents; 12,000 of them are fatal. (3)

According to the economic costs of occupational accidents and ill health are increasing rapidly: "compensation figures indicated that approximately 4% of the world's gross domestic product disappears with the cost of diseases through absence from work, fatality compensation, sickness treatment, disability, loss of efficiency of co-workers and returning victims, repair of damaged equipment/machinery, spoiled work and retraining new workers and survivor benefits."

As shown in Table 1 above, 52 Eritrean enterprise employing 8,619 workers reported 551 accidents to the Ministry of Labour and Human Welfare in 2003. The total of 551 accidents led to 8 deaths, 27 permanent disabilities and 516 cases of temporary incapacity for work. Due to these accidents, 61,751 working days were lost. We can only imagine what the figures would be if all employers regularly reported the accidents that occur on their premises. One can understand, therefore, how severely occupational injuries and illness affect economic growth in Eritrea.

Achievements and strategies for improving occupational safety and health at workplace

Since the transitional labour law No.8/1991 was proclaimed soon after independence, on the basis of very limited experience, it did not accommodate all the necessary instruments for the protection of workers or for the creation of a healthy and safe workplace. Taking this into consideration, the Ministry of Labour and Human Welfare of the Government of Eritrea has been revising the labour law, applying a tripartite approach as the guiding principle in creating the law. This indicates that the Ministry of Labour and Human Welfare has clearly understood the importance of employee and employer awareness, acceptance, and participation in the law-making process. If the social partners accept and appreciate the purpose and specifics of the law, they do all they can to live within its rules and spirit. The existing (revised) labour law No. 118/2001 was put under consideration con-

cerning the significance of labour courts and tribunals (the Labour Relations Board) in order to enable the appropriate appellate system to deal with complex occupational safety and health matters and other sensitive labour issues. Also, the law has made clear the importance of bipartite consultation at the undertaking level, in order to make occupational safety and health a part and parcel of the daily work; this practice will help to build up a safety and health culture at the national level.

The Ministry also specifically took into consideration the participation of employees in the prevention of occupational accidents and illness, because they frequently possess a better understanding of the day-to-day operation of their machines or workplaces. They may know how to make it better and safer. They may know why accidents can or do happen, even when the management cannot figure it out.

The Ministry of Labour and Human Welfare purchased scientific industrial hygiene monitoring equipment in order to regulate at the workplace as concerns reasonably practicable safe and health exposure levels. With the help of an ILO consultant, practical training on the application of the equipment given to the Inspectorate in 2002.

The Labour Inspection Division provided training of trainers for 120 workers from 42 big industrial enterprises. The topics were: causes of occupational accidents and diseases and their prevention; the impact of HIV/AIDS in the world of work; the ILO Code of Practice (4); and how to give first aid when accidents or illness occur among workers.

The Ministry has the following key strategies for improving occupational safety and health at workplace:

- campaigns to promote health and safety awareness through teaching instructions, posters, films, video, etc.
- conduct health and safety surveys/assessments to establish baseline information on the status of industrial health and safety.
- endorsement of training for management and employees at tailor-made courses.
- advise and assist industries to develop and adopt sound policies in line with the national requirements.
- investigate accidents at workplaces, to determine effective corrective measures. At undertakings, conduct inspections regarding occupational safety and health and minimum labour conditions.
- hold specially targeted seminars, workshops, and conferences on the diverse topical issues in occupational health and safety. Ensure that there is national consensus by involving management and employee participation through group meetings, etc.
- enhance growth of the national economy through the creation of healthier, safer workplaces and workers with high productivity and reduced losses.
- strengthen the clinic found at the undertaking level and transfer first aid to occupational health services.

Conclusion

Those countries and employers that work hard to promote workers' safety and healthexperience good economic growth because the workers are safe and healthy to produce more; "safe workers produce safe production". There will be no work-related absenteeism, sickness treatment, disability, and survivors' benefits due to occupational injuries and illness; or, if there are, they will besmaller. On the other hand, employers that do not give priority or credit to the safety and health of workers, and countries that do not enter into commitment to create safe and healthy workplaces by introducing improved policies, wider availability of occupational health services, improved infrastructure and manpower and better recording and notification of occupational accidents and diseases, will fall victim to occupational injuries and diseases. As a result, the national gross domestic product will be greatly affected. Therefore, the creation of safe and healthy workplaces is vital for the economic development of any nation.

References

1. Brixiova Z, Comenetz J. The gender gab in education in Eritrea in 1991–98: A missed Opportunity? IMF Working Paper, WP.01.94 (2001).
2. Armeberg M, Pederson J. Urban household and urban economy in Eritrea. Analytical report from the urban Eritrea household income and expenditure survey. 1997.
3. Takala J. It is worse than war at work. Workers' Health International Newsletter: Supplement 1999;(55):24.

Tecklu Ghebreyohannes
Ministry of Labour and Human Welfare
Department of Labour
Director of Labour Inspection Division
P.O. Box 5252
Asmara, Eritrea
E-mail: Mezghebo@yahoo.com
Fax: 291-1-151780

The International Occupational Hygiene Association (IOHA)

6th International Scientific Conference (IOHA 2005)

Pilanesberg, South Africa, 19–23 September 2005

Programme

The IOHA 6th International Scientific Conference takes place in the Pilanesberg National Park, North West Province, South Africa in September 2005. This is organised by IOHA, the Southern African Institute for Occupational Hygiene (SAIOH) and the Mine Ventilation Society of South Africa (MVS).

The majority of African countries do not have trained occupational hygiene personnel. IOHA 2005 will address this and sectors such as Agriculture, the Informal Sector, Manufacturing and Mining which are important to Africa and other continents.

Keynote Presentations

Status, Promotion and Development of Occupational Hygiene in Africa and Globally; Occupational Hygiene in Agriculture and Mining; Communications and Information Technology; Global trends in Occupational Hygiene Education and Training; New Developments in Occupational Hygiene; Silicosis, HIV/AIDS and TB; WHO/ILO Joint Effort on OHS in Africa and the WHO Network of Collaborating Centres in Occupational Health (WHO CCs) Global Work Programme.

Professional Development Courses (PDCs)

A broad range of PDCs are available including accessing the Internet for OHS Information, Control Banding/ ILO Toolkit, Control of Diesel Emissions and Airborne Dust; Health and Safety Management Systems, Epidemiology and Statistics, Ergonomics, Introduction to Occupational Health, Occupational Hygiene Measurements, PIMEX (PIcture Mix Exposure) and Vibration.

IOHA 2005 includes a meeting of the WHO Network of Collaborating Centres in Occupational Heath and the 3rd International Control Banding Workshop (3ICBW).

David W. Stanton, for IOHA 2005
Conference President and
Organising Chair
http://www.saioh.org/ioha2005/

A reader's experience:

Allergic reactions in an occupational environment

A. Chithila
MALAWI

An allergy is a disturbance or reaction that affects only certain people when something they are sensitive to is inhaled, ingested, injected into the body, or touches the skin. An allergy is not infection and cannot be passed from one person to another. However, children of allergic parents also tend to have allergies.

Allergic reactions can range in severity from mild to very serious. The allergic reactions that occur include: itching rashes, lumpy patches or hives; a runny nose and itching or burning of the eyes; irritation of the throat, difficulty in breathing or an asthmatic reaction; and allergic shock.

In most cases allergic persons suffer more in certain seasons, or whenever they come in contact with the substance that bother them. Among the common causes of allergic reactions are: pollen of certain flowers and grasses; chicken feathers; dust; kapok or feather pillows; certain medicines, especially penicillin injections; the hair of from domestic animals, such as cats and dogs; mouldy blankets or clothes; and specific foods, especially fish, meat and beer.

During my teaching career at a certain Secondary School, I had a colleague who was allergic to chalk dust. Whenever he was writing on the chalkboard, the skin on his hands became wrinkled like those of an old man. In consequence, another type of chalk was bought as a replacement. This new chalk type provoked no allergic reactions.

Another friend of mine used to develop an itchy skin irritation whenever he ate the meat of any four-legged animals. As a result he stopped eating such meat and now eats chicken meat.

It has been alleged in Zimbabwe that some cashiers or bank clerks who handled bank notes developed skin irritation on the hands. This was apparently due to chemicals with which the bank notes are processed. When labour inspections in selected banks were carried out here, people who have handled cash for more than twenty years claimed that they have had no problems.

In a certain area of Malawi, an abandoned bus wreckage was thought to be the source of what was purported to be an irritant fibre. Whenever people passed by the wreckage, they developed a skin rash. It was, however, not proved scientifically that the allergy was caused by fibres from the wreckage.

Any substances encountered in the working environment should be identified with regard to, among others, the following characteristics: the conditions of exposure (quantity, volume, concentration, frequency, duration and nature of exposure, possible absorption by the skin); and biological studies concerning the substance in the irritant. It is also important to know in which sectors of activity the substance is encountered. All this is essential for adequate diagnosis and prevention.

Literature

1. Werner D, Thuman C, Maxwell J. Where there is no doctor, a village health care handbook. Hesperian Foundation, USA. 1992.
2 Encyclopaedia of Occupational Health and Safety, Volume 1, 3rd revised edition, ILO.
3. National Workshop for Labour Inspections in collaboration with the African Regional Labour Administration Centre (ARLAC), Lilongwe, Malawi.

Andrew Chithila
Regional Occupational Safety
and Health Officer (North)
P.O. Box 35
Mzuzu, Malawi
Fax No. +265 0133 2595
Tel. +265 0133 2797

First IOHA Scientific Conference in Africa

South Africa, September 2005

Call for Sponsors

In line with the conference theme "***Promoting Occupational Hygiene in Africa and Globally***" the Organising Committee for IOHA 2005 seeks sponsorship to bring potential occupational hygienists in African Countries to South Africa for a one-week fundamentals of occupational hygiene course prior to attending IOHA 2005. On returning to their respective countries they will help promote occupational hygiene in Africa. Your valued attendance and support for IOHA 2005 will assist in achieving this ideal.

If you are a corporate occupational hygienist or OHS staff member with African operations please motivate for your African occupational hygiene/OHS staff to attend if appropriate the fundamentals of occupational hygiene course and/or IOHA 2005. Fee paying delegates on the course and at IOHA 2005 will help subsidise others.

If you wish to sponsor one or two Africans please contact the Conference Secretary.

We look forward to your support.

David W. Stanton, for IOHA 2005
Conference President and
Organising Chair
Conference Secretary: Tracy Brighton, IOHA 2005 c/o MVS, PO Box 93480, Yeoville 2143, South Africa Tel/ Fax/ TAD: +27 11 487 1073 Email: minevent@global.co.za

http://www.saioh.org/ioha2005/

Themes of the African Newsletter in 2005

	Theme	Deadline for manuscripts
1/2005	Ergonomics	28 February 2005
2/2005	Occupational health and safety programmes and management	31 May 2005
3/2005	Occupational hygiene	30 September 2005

Readers are encouraged to submit manuscripts addressing the above themes. Also articles on other topics in the field of occupational health and safety are welcome.
Please let the Editorial Office know in advance if you are planning to submit a manuscript. Submitted articles will be published provided there is space in the Newsletter.

Please send the manuscripts to:
Suvi Lehtinen, Editor in Chief
African Newsletter
Finnish Institute of Occupational Health
Topeliuksenkatu 41 a A
FI-00250 Helsinki, Finland
Enquiries E-mail: marianne.joronen@ttl.fi
Fax No. +358 30 474 2548

Instructions for contributors

Text

The maximum length of the typewritten manuscript is 4–6 pages, including all the figures, tables and the list of references. The maximum length of Editorial is 1–2 pages; news in brief may be from couple of lines to one page. Please send your text both in printed and diskette form; if possible, either written in Word or Word Perfec or by e-mailt.

The manuscripts should be typed with double spacing (including references and tables) on one side of the paper, with wide margins (at least 3 1/2 cm).

Before submitting the typescript, please check and correct the typing, as well as the references and numerical values given in the text. As far as possible, avoid footnotes and abbreviations; if abbreviations are essential they should be defined the first time they occur and used consistently.

Main heading within the paper should be clearly distinguished from subheadings.

Illustrations

The illustrations should be in black and white, or in colours and original drawings in black ink or in colours. Number the figures in the order in which they appear in the text and indicate their position in the margin of the typescript. In the text, illustrations should be referred to as Figure I, Figure 2 etc. Each figure should be identified by the author's name, the title of the article and the figure number. In cases where it is not obvious, the top should be indicated. Diagrams and sketches should be suitable for direct reproduction and should be sent as separate original documents too.

Photos and slides

Contributors are encouraged to provide their articles with photos. For printing black and white or colour paper copies or colour slides are preferable. Digital photos of high resolution are accepted (the resolution should be at least 250–300 dpi, if possible).

References

The author is responsible for the accuracy and completeness of his bibliography.

The reference list should be numbered and arranged in the order in which they appear in the text, containing only those references found in the text. The references in the text should be indicated with the number in parentheses. When several references with the same author(s) are listed, they should be in chronological order. No unpublished data should be included in the reference list; it should be referred to in the text itself (e.g. "According to the unpublished results of ..." or "In a personal communication from..."

References to periodicals should include the authors, title, name of periodical, year, volume, and pages. Those for books should include authors or editors, title, publisher, city and year; those for a section of a book should contain the authors, title, editors, book title, publisher, city, year and inclusive pages.

Contact persons/country editors

Chief Inspector of Factories
Commissioner of Labour and
Social Security
Department of Labour and
Social Security
Private Bag 0072
Gaborone
BOTSWANA

Samir Ragab Seliem
Egyptian Trade Union Federation
Occupational Health and
Safety Secretary
90 Elgalaa Street
Cairo
EGYPT

Ministry of Labour and
Social Affairs
P.O.Box 2056
Addis Ababa
ETHIOPIA

Commissioner of Labour
Ministry of Trade Industry and
Employment
Central Bank Building
Banjul
GAMBIA

The Director
Directorate of Occupational
Health and Safety Services
Commercial Street
P.O.Box 34120
Nairobi
KENYA

Noel J. Mkhumba
Information and Documentation
Centre
P/B 344
Capital City Lilongwe 3
MALAWI

Federal Ministry of Employment,
Labour and Productivity
Private Mail Bag 12576
147, Broad Street
Lagos
NIGERIA

Peter H. Mavuso
Head of CIS National Centre
P.O.Box 198
Mbabane
SWAZILAND

Chief Executive
Occupational Safety and
Health Authority
Ministry of Labour,
Youth Development and Sports
P.O.Box 9724
Dar es Salaam
TANZANIA

Paul Obua
Occupational Health and
Hygiene Department
Ministry of Labour
P.O.Box 4637
Kampala
UGANDA

Editorial Board