occupational hygienists who have obtained training available at a few academic institutions in the country. Skills in this field are scarce and attention is needed to both training and career development if we are to meet the needs of the economy and prevent further outbreaks of occupational disease.

In conclusion, we sit with a major health risk that is poorly understood by the mainstream medical fraternity, has fragmented regulatory control across both prevention and compensation, a shortage of skills in the field, and a national institute that might be in jeopardy.

With all this going on there is a need to highlight the issues in occupational health to create greater awareness of the issues and perhaps stimulate a dialogue between the major stakeholders to map out the future of occupational health in South Africa. Could the NIOH become the glue between all the pieces?

With this in mind, SASOM and SAIOH have commissioned a series of articles to discuss occupational health in more detail over the next few issues of *Occupational Health Southern Africa*, which will hopefully stimulate the discussion.

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Where to NIOH?

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BACKGROUND

The National Institute for Occupational Health (NIOH) – part of the National Health Laboratory Services (NHLS) – is the only multidisciplinary specialised state occupational health service in South Africa. It is not only the scientific resource to all industries nationally, but a player within and outside the African continent. Apart from assisting with the drafting of regulations and providing specialised services and laboratories, staff is also involved in research, teaching, and specialised skills training.

Rumours are that the Institute's role and future home are under revision. Perhaps the problem is the lack of real understanding of the role of occupational health in South Africa? A fiscal challenge? Or, at worst, restructuring without ownership as it does not fit neatly into a box of health services. Kathy Malherbe looks at the well-being of occupational health, the role of the NIOH, and why it appears to be an unnecessary conundrum for all stakeholders.

WHERE TO NIOH?

Occupational health has been in the news recently, predominantly for the wrong reasons, due to epidemics of occupationally-related diseases amongst mine workers and the lack of delivery from the Compensation Commissioners' offices. The NHLS too has been marred by corruption allegations this year and the swift termination of the whistle blower's employment.[1] However, they welcome a new era of good news with the appointment of Joyce Mogale as the new CEO this month. The general consensus is that Mogale will bring a welcome change and restructuring of this umbrella body.

The NHLS is the largest diagnostic pathology service in South Africa, with the responsibility and pivotal role of supporting the national and provincial health departments in the delivery of healthcare. It also provides laboratory and related public health services to over 80% of the population through a national network and adheres strictly to international standards. Testimony to this is that the NHLS was the recipient of a prestigious international award in 'European Quality' in the health sphere in Monteux in Switzerland.[2]

Is the NIOH to become a refugee?

Rumour has it that the NIOH is going to be forced out of its home – currently the NHLS. And the organisation appears to have nowhere to go. Alleged re-structuring is neglecting to take into account the pivotal role it plays in occupational health and safety in South Africa. Preventive health is poorly understood by most people and, when it comes to health and safety, prevention needs a great deal of motivation and, often, enforcement. The end user – the worker – suffers the most if prevention is ineffective.

Unless the restructuring takes into account the needs of affected parties, an opportunity to build an institute most appropriate for South Africa will be lost, and what we have could well be damaged.

The NIOH is a division of the NHLS but the plan is to move it out of the NHLS along with the National Institute for Communicable Diseases (NICD) and the National Cancer Registry (NCR). However, the NICD and NCR are going to be part of the newly formed NAPHISA – National Institutes of Public Health of South Africa. The NIOH was also supposed to be part of NAPHISA but, for incomprehensible reasons,

this plan appears to have fallen through. It will be a travesty if the NIOH isn't allocated a home.

The question is 'why'?

The NHLS has supported the three institutes through money derived from the provinces. This move will relieve the NHLS of the burden of cost to the province of these institutes. The NICD is more clearly a DoH support structure, unlike the NIOH which supports a number of government departments.

THE ROLE OF THE NIOH

The NIOH was born out of the mining industry and performed important work in researching the occupational health risks in mines. It has evolved to also provide important support and laboratory services for both general industry and mining; mining employs only 500 000 of South Africa's 15 million working people. The NIOH provides specialised services to industry and is dedicated to researching the health effects of work.

The NIOH should equitably serve all 15 million

Mining is a high risk industry and deserves attention but specialist services such as clinical, occupational hygiene, toxicology and advisory services are needed across all industries, including construction, agriculture, fishing and manufacturing.The laboratories also provide some unique public sector analyses, for example, asbestos fibre characterisation, and the measurement of some chemicals in air as well as exposures of workers to these.

Occupational health and safety needs recognition as an essential preventive discipline at the highest level of the State, and the country needs to provide the resources to protect the health of workers. Workers have a constitutional right to not be harmed at work and the State needs to provide the services to uphold this right. Also, a national institute should be instrumental in building societal awareness of the importance of occupational health and safety. The dissipation of an institute such as the NIOH, or a misplaced home, will slowly erode the level of care and it will slide backwards in terms of research and care of the worker.

THE REALM OF OCCUPATIONAL HEALTH IS NOT STATIC

Occupational risks are in a constant dynamic state which means that, as science and technology develop, so new risks have to be taken into account by practitioners and the NIOH. The labyrinth of medical and safety compliance in the construction industry is a prime example, which is why the new Health and Safety regulations were promulgated in December 2014.

Nanotechnology is an excellent example. Although nanotechnology is a major breakthrough in science designing, producing and using structured devices through manipulating atoms and molecules at nano scale, it needs to be done responsibly and in a regulated manner. The risk of exposure to nanoparticles is also a priority strategic thrust for the NIOH – both researching the toxicity of nanoparticles and contributing to guidelines for the measurement thereof and the surveillance of workers. This is in collaboration with government departments such as the Department of Trade and Industry. Although the NIOH does not promulgate regulations, it provides scientific input in collaboration with international agencies.

OCCUPATIONAL HEALTH IS NOT JUST A 'NICE TO HAVE'

National institutes for occupational health and safety are common around the world. All BRICS countries have them in one form or another. They are common because occupational health and safety requires specialised interdisciplinary functions. An institute is a means of bringing the requisite disciplines together to support and develop the Occupational Health and Safety System (OHSS). Specialised occupational health and safety practitioners are often in short supply. A national institute is a mechanism for establishing capacity in a range of key disciplines, and providing and developing expertise through critical masses of practitioners.

SO WHAT ARE THE VITAL SIGNS OF OCCUPATIONAL HEALTH AND SAFETY IN SOUTH AFRICA?

The symptoms

Dr Frank Fox, South African Society for Occupational Medicine (SASOM) National Secretary says, "Our health and safety laws are amongst the most modern in the world and are constantly under review by the various departments concerned. However, the fragmentation makes things complicated, as there are different approaches between the Department of Mineral Resources (DMR) and the Department of Labour (DoL). The DoL is making a concerted effort to improve both its services and the law. The DMR is doing the same at the centre but the provincial inspectorate is very varied in quality and training and a law unto itself. A major challenge is that we have workplaces which fall under both the Occupational Health and Safety Act and the Mine Health and Safety Act. These two Acts have separate standards for occupational exposure limits, which leads to difficulty in interpretation and implementation."

He says, "The big difference between us and the rest of the world is the quality and training of the inspectorate, and the subsequent application of the law. Despite efforts to improve the administration of the compensation system it is not readily apparent.

"On the medical side, there is no service provision for occupational health within the DoH. Their focus seems to be entirely treatment focused. There is some light in that

occupational health has been mentioned in the National Health Insurance (NHI) white paper but this is still a clinic-based treatment focus."

And complications…

In considering the status of occupational health in South Africa, it is important to consider other aspects of the OHSS besides occupational health service delivery. For example, the enforcement agencies are under-resourced and lack skills; surveillance of occupational disease and injury is weak (especially of disease); funding for research is inadequate, especially outside the mining industry; skilled human resources are in short supply; the services only cover a small proportion of workers; rehabilitation of injured workers is poor; and the compensation systems are largely dysfunctional.

There is also the pivotal role that education and communication play in reaching the entire working population. Starting at a young age and reaching the entire population is important – Brazilian institutes have programmes in schools and, in the USA, the National Institute is very active on social media sites in order to reach those who need it most.

Dr Fox feels that occupational health and safety is treated as the 'poor cousin' within the DoH. "Additionally, occupational health and safety is not a priority, given the many competing health and safety issues, e.g. motor vehicle accidents, HIV, TB, cancer, obesity, diabetes, etc. These issues are, of course, very important and this is not a competition. But it does mean that, if you do not have dedicated capacity for occupational health, it will not be picked up elsewhere."

Part of the problem is the lack of understanding of the people in positions of power in occupational health, compounded by the fragmentation of the regulation of occupational health and safety within government, and the consequent lack of ownership of such a valuable resource as the NIOH. Although occupational health is showing signs of life, the prognosis depends on the administration of a change of perception and a substantial dose of dialogue.

SMMEs ARE NOT THE LITTLE LEAGUE IN OCCUPATIONAL HEALTH

Occupational health is battling to find its proper place in South Africa and is, at best, at a crossroads. Only large companies are able to offer services to employees and these are concentrated in urban areas and in large (but remote) mining and manufacturing companies. The neglect is at grassroots level, rural areas, small, medium and micro-enterprises (SMMEs), and the government's serious focus on occupational health, not just in terms of regulation, but in terms of service promises and implementation.

At the moment, the provision of occupational health services is mandated within the Mine Health and Safety Act and within some regulations under the OHS Act but the service has to come from private practitioners. This is a cost that smaller industries bear very reluctantly. Other countries have organised state-mandated occupational health services.

Most employment within South Africa is in the SMME sector, according to the National Treasury research report (2008) on SMMEs. South Africa has an estimated 2.8 million SMMEs which contribute 52%-57% of GDP.[3] SMMEs also provide about 60% of jobs, and contribute more than 40% of the country's total remuneration.[3] This means that SMMEs in South Africa employ more people than corporates within the private sector and government combined.

It is not common for labour brokers to provide occupational health services, and SMMEs cannot afford them," says Fox (even if they are aware of the need, which most are not). There is also a lack of data on the true burden of ill-health caused by poor working conditions. Quality control in occupational health is another concern. It is caring for a few of the people all of the time and most of the people not at all. The NIOH, together with occupational health organisations in the profession, has a pivotal role in addressing these issues – SMMEs, quality control and the true burden on the health of workers caused by poor working conditions, as well as quality control in occupational health.

THE NHI AND THE NIOH

Dr Fox agrees, "This is exactly where the NIOH may have a role to play. Looking after the smaller industries and providing a service that they can afford. The DoH has a role in making occupational health services accessible to unserved and poorly served workers (e.g. informal sector, small enterprises, retired and unemployed workers). The NHI does present an opportunity to develop this. The role of a national institute in this would be to support policy development, conduct research into what works and what does not, provide advice and high-level laboratory and professional services to support the DoH services, and train practitioners. A national institute would not be involved in the day-to-day delivery of services, however."

FOCUS SHOULD BE ON PREVENTION NOT CURE

SMMEs should be a major focus for occupational health and safety. "There is so much more to occupational health, including creating decent work, preventing occupational injury and disease, and promoting the health of workers. In many countries, compensation is seen more as social security than occupational health. Also, it tends to dominate discussions on occupational health when, in fact, prevention should be the dominant discussion, particularly in South Africa."

SO WHAT TO DO?

It may be that there is need for change to bring the NIOH into a more meaningful role in the overall management of occupational health and safety in the country. But this will not happen if it is simply demolished without broad consultation with all stakeholders.

The treatment

Dr Fox says, "SASOM would like a transparent and constructive discussion between the DoH and all stakeholders about the future structure of occupational health services in the country and this includes the future of the NIOH."

Summary of NIOH's role

- Support and inform the drafting of national policy, model legislation, strategic and operational OHS plans
- Provide specialised services and laboratories
- Facilitate teaching and training
- Facilitate the production of OH specialists
- Facilitate decisions about research priorities and research

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People on the move in occupational health

Anja Franken

Anja Franken completed her PhD in Occupational Hygiene at the North-West University (NWU) in 2014, and the degree was conferred in May 2015. She is a lecturer in the School of Physiology, Nutrition and Consumer Sciences at the NWU, Potchefstroom Campus, where she lectures post-graduate occupational hygiene students. She supervises MSc and PhD students in their respective research projects, and has successfully supervised 13 MSc students to completion since 2008. Currently, she is participating in the development of modules for the new BHSc degree in Occupational Hygiene which will commence in 2016.

Anja Franken.

Anja has published several peer-reviewed papers, both nationally and internationally, and has presented her research at conferences in South Africa, the Netherlands and France. She obtained a Thuthuka research grant from the National Research Foundation for 2012-2014, which was extended to 2015-2017.

For her PhD, Anja investigated the permeability of metals, such as platinum and rhodium, through human skin, and the factors potentially influencing permeability. Her research showed that both platinum and rhodium in salt form are permeable through Caucasian skin, with increased permeability of platinum through African skin. The results were published in *Toxicology in Vitro* (2014 (8):1396-1401) and *Toxicology Letters* (2015 (232): 566-572) and were also presented to the International Platinum Group Metals Association's PGM Science Task Force in November 2014. For the mining and refining industry, the research findings have indicated that these metals can permeate through the skin and potentially reach the vascular system. However, more importantly, the metals are retained inside the skin which leads to continued permeation even after leaving the workplace; therefore, any skin contact with these metal salts should be avoided. In addition, the diverse workforce should be considered as African workers have an increased risk for skin permeation.

Anja's research continues with the comparison of permeability between African and Caucasian skins, as well as supervision of post-graduate students investigating the influence of pH and mechanically damaged skin on permeation of platinum group metals.