INDOOR AIR QUALITY LEGISLATION IN SOUTH AFRICA

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ABSTRACT
This paper assesses legislation in South Africa with respect to indoor air quality. It indicates that, although there is no specific law and comprehensive policy that deals, specifically with indoor air quality, there are several acts of parliament that safeguard health and address specific health matters, in which indoor air quality does not feature prominently. The paper will describe the role of the Constitution, Health Act, Atmospheric Pollution Prevention Act, Housing Act, Occupational Health and Safety Act as well as the National Building Regulations in making provisions for better indoor air quality.

INDEX TERMS
Indoor air quality, Legislation, Health, South Africa

INTRODUCTION
The right to breath healthy indoor air is one of the many principals formulated by the World Health Organisation (WHO, 2000). This is because the quality of indoor air that one breathes directly affects the health and well-being and also has a bearing on the quality of life and lifestyle one enjoys. However, the control of indoor air quality is often inadequate. Most exposure to indoor air occurs in private homes, where interventions by public regulations is often considered a violation of personal freedom (WHO, 2000). To a large extent, the inadequate quality of indoor air arises from a poor articulation, appreciation and understanding of the policies related to indoor air quality. Poor building design, construction, materials and maintenance as well as ambient conditions, creates indoor microclimates in which various biocontaminants including fungi are able to proliferate (Singh, 1994).

A study on indoor air quality in a shack settlement in Durban, South Africa, showed that acute respiratory illnesses (ARIs), accounted for the high incidence rates on children (Danaviah et al, 2000). Amongst the risk factors for ARIs were family size, overcrowding, poor sanitation, malnutrition and exposure to poor indoor air, typical to shack settlements (Danaviah et al, 2000). Approximately 30 % of the paediatric admissions in some of Durban hospitals are due to asthma (Danaviah et al, 2000), as compared with an estimated 20 - 25 % incidence rate worldwide (Phelan et al, 1990). Children are becoming the main focus in this risk area, as they exclude the confounding effects of smoking and occupational exposure to allergens. They would additionally experience more acute manifestation of a disease condition due to their size and underdeveloped immune systems. ARIs present the most alarming statistics: one infant death every seven seconds and four and a half million deaths annually in developing countries (Berman, 1991).

Awareness of the health significance of good indoor air quality is low in many societies

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mainly because of sufficient information is not available to those affected. The laws
protecting people from harmful exposures indoors are less developed, which potentially
increases inequalities in health and aggravates health risks in the less informed, poorer parts
of the society and amongst the most vulnerable groups. The question is how does
government protect the communities and the workers? This paper is aimed at assessing
indoor air quality legislation in South Africa in the context of health protection.

THE HEALTH ACT NO. 63 OF 1977
The Constitution of South Africa is the basis of law and legislation in the country. Chapter 2
of the constitution states that, everyone in South Africa has the right to live and work in an
environment that is not harmful to their health and well-being. The World Health
organisation (WHO) is also in agreement with right as per their principals (WHO, 2000).

The aim of the Health Act is to provide for measures for the promotion of the health of the
inhabitants of the republic; to that end to provide for the rendering of Health Services; to
define the duties, powers and responsibilities of certain authorities which render health
services in the Republic; to provide for the co-ordination of such health services; and to
provide for incidental matters.

The Health Act deals with the many regulations put in place in terms of medical conditions,
communicable disease, and conditions dangerous to health. There is more emphasis placed
on food, milk and water as conditions that are dangerous to health than air, which is an
equally important necessity to everyone. Chapter 5 of the Act makes provision for notifiable
medical conditions relating to communicable diseases, mode of transmission by the various
vectors and unhygienic conditions as sources of infections. The Act vaguely mentions
dwellings, over-crowding, and poorly ventilated design as a source of dangers to health,
(Regulation 34), which is related to air quality.

THE ATMOSPHERIC POLLUTION PREVENTION ACT 45 OF 1965
This legislation primarily focuses on Air Pollution in the forms of smoke, dust and vehicle
emissions. Smoke emissions relate only to boiler systems and heating appliances and is
focused to industrial and occupational applications and not to the residential set-up. It is a
right of every person to enjoy good indoor air, be it in residential settings or within work
environments, which is not provided for in this act. The external environment and its impact
by pollution generated from industries, dwellings, locomotives is dealt with and not the
conditions and impact suffered interiorly. This legislation is also fairly old and requires
updating in accordance to the changes and demands of the country. The Act comprises of 5
parts, summarised as follows: -
Part 1: The National Air Pollution Advisory Committee - its formulation and functions.
Part 2: Control of Noxious or offensive gases - where the government designates controlled
area, and authorise scheduled processes. This part does not deal with indoor air
quality, as it focuses on industrial and occupational.
Part 3: Atmospheric Pollution by Smoke - function delegated to the Local Authority. This
Part also deals with industries, however Section 14 makes provision for fuel burning
appliances in dwellings, and the use of fuels (18,d).
Part 4: Dust control - in Mines
Part 5: Air Pollution by fumes emitted by Motor Vehicles
Part 6: General provisions of the act.
There are several important aspects that are construed as weakness to the Act:
- Smoke control regulations should apply to residential areas, in particular low-income communities who tend to live in close proximity to large industrial settings.
- Provisions should be made to control volatile organic compounds and fugitive emissions
- Complaints about dust are always referred to the Local Authority who has no powers to control dust.
- There is no air quality standard that has been set nor any consideration made to health and environmental impacts.
- Omission of this salient information such as Indoor air quality, its guidelines, standards and environmental impacts, weakens this act.

**THE KWA-ZULU NATAL HOUSING ACT**

The Kwa-Zulu Natal Housing Act was established to provide for a sustainable housing development in the province within the framework of National and Provincial Housing Policy. This documentation governs the administrative and financial aspects within the housing development and does not emphasize the significance of indoor air quality in such developments, which is of prime importance to any habitable structure. Although, there is a shortage of housing in the country and the government sector is implementing mechanisms to reduce the shortage by providing to the homeless, the provider must take cognisance of the fact that the dwelling that is built and provided must promote the health of the occupants and not be a source of ill-health and diseases. A scenario that will illustrate this point is when a housing scheme is planned, firstly to alleviate the present housing crises, thereby complying to the Housing Act and meeting its targets, on the other hand is such provisions of houses for the betterment and improvement of ones health and lifestyle.

Ventilation is of paramount importance in the provision of houses. It allows for constant air movement and exchange that improves the general health of the occupant. With poor ventilation, respiratory ailments are common that affects everybody, especially the young and the very old who are more susceptible to breathing ailments. Diseases like pulmonary tuberculosis is common when people live in congested and overcrowded conditions, where air movement and exchange is limited.

**THE OCCUPATIONAL HEALTH AND SAFETY ACT NO. 85 OF 1993**

Industries and employment houses are the areas of reference in the Occupational Health and Safety Act, which provides for the health and safety of persons at work and in connection with the use of plant and machinery and the protection against hazards. One of the 8 basic rights of the South African employee in the labour field is the Right to protection of his safety and health at the workplace, which is acknowledged by the South African government in a policy statement in the Manpower 2000 Manifesto.

According to (Salut, May 2000), the OHS Act is primarily based on and industrial approach. It does not mean that standards from other countries may not be used for these purposes, but they have the power of recommendation rather than enforcement, although the protection of an employee's health and safety is still to be enforced. People spend more that one third of their daily life at work attempting to go at it as comfortably as possible with emphasis on an acceptable level of fresh and safe air supply at all times. It often happens that the employer's provisions fall short of employee expectations concerning indoor air quality.

Indoor air quality typically refers to a situation whereby fresh air supply to a building is done by mechanical means and the quality of that air is affected by the influence of the following:
- The occupancy requirement (amount / type of people / furniture / household products such as cleansers, insecticides, etc).
- The surrounding outdoor conditions (humidity / temperature / air pollution factors, etc.) which need to be controlled through mitigation or prevention, on entering the building.
- The mechanical equipment which not only must be able to cope with the screening of harmful factors from the surrounding outdoors, but must also cope with the habits of the occupants (smoking, lay-out of offices, partitioning, etc).

NATIONAL BUILDING REGULATIONS
These are guidelines that stipulate minimal regulations pertaining to ventilation, which is directly related to indoor air quality. The minimum ventilation requirement for and room is 5% of the floor area of that room and 10% of the floor area is the minimum lighting requirement. Practical problems that are associated with buildings that are not conforming to specific guidelines that are enshrined in the National Building Regulations are:
- Lack of purified indoor air due to the poor installation of open-able windows and doors.
- Cross ventilation allows for increased exchange of air.
- Poor construction of the building also leads to health effects, for example, the improper mixture and use of mortar in certain areas may lead to mouldiness in the building, which impacts negatively on proper building maintenance and the health of the occupants.
- Building design, should also promote health and well-being. The heights of ceilings and roofs must be so designed as to allow for maximum air exchange.
- Selection of building furnishings must also be implemented, with the health of the occupant in mind.

COMPARATIVE POSITION OF SOUTH AFRICAN INDOOR AIR LEGISLATION WITH RESPECT TO OTHER COUNTRIES
According to (Husman and Nevalainen, 1999), Finland is leading the way as one country that has made legislation in which indoor air quality requirements of dwellings and other premises are clearly. Finland has also developed proper guidelines, which state that visible mould growth in residences is a health hazard. Indoor air regulations exist in many Nordic and Central European countries as well as the United States and Canada (Husman TM, 1999). In these countries, the problem caused by moisture and microbial growth is considered a health risk but is not mentioned in legislation. In the United States, recommended values are given for ventilation rates, particulates, and several chemicals in indoor air but not for microbes. In other European countries, e.g., the United Kingdom, microbial growth and moisture in buildings are considered potentially harmful to health, and recommended values for relative humidity, particulates and ventilation rates are given as well as for control of moisture in buildings. In Germany, house dust, micro-organisms and other allergens are considered health hazards, and measures are given for avoiding these risks. In Sweden, moulds and other moisture related microbes are considered health risks, but no recommended values nor regulations are given. The Swedish National Action Plan states that no-one should need to risk sickness or symptoms caused by defective indoor environments. (An action plan for Sweden, 1996).
CONCLUSION
Indoor air sciences represent a truly interdisciplinary field with no separate academic curriculum. This situation is also reflected in the area of the above legislation. Although there have been calls for legislation that would address the indoor environment in particular, South Africa generally do not have such specific legislation. The results of this situation are that there is generally no singly profession of authority that has full responsibility for IAQ. The same applies at government level, where a number of ministries are concerned in one way or the other with issues related to indoor environment. To avoid the consequence of problems not being addressed adequately because they are shifted from one authority to another, it is highly to be recommended that an inter-ministerial task force be established to make policy related to indoor air quality. Indoor air quality and health is essential to sustainable development in any country. In many countries environmental protection would still be a mere political catchphrase without content or specific shape today, if it were not for the community’s environmental interventions. There is also a need to note that communities, although ignorant and not well informed still take the precautionary steps to live healthier, and it is imperative that laws and regulations be formulated at national and international level to assist the communities and promote healthy living. The fact remains that while a case can be made for supranational laws for pollution without boundaries, one nation’s internal pollution is another nation’s cultural tradition. Whatever the transnational element in air pollution, indoor air pollution is rightly a national concern, a matter that requires South Africa to pay attention to.

ACKNOWLEDGEMENTS
The authors wish to thank the following, for their financial assistance in making this study possible:
- Medical Research Council
- National Research Foundation
- University of Natal research Fund.

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