Introduction

Health surveillance is presently not an integrated part of air quality management in South Africa, although ambient air pollution standards are derived from epidemiological studies of personal exposure. A growing number of studies have shown that the largest burden of air pollution-related diseases is on developing countries where air pollution levels are also among the highest in the world. Air pollution may cause symptoms ranging from eyes, nose and throat irritation, exacerbation of asthma and related lung function to cardiovascular symptoms such as high blood pressure1 and lung cancer. There is also a statistically-significant association between air pollution and mortality (death) from respiratory and cardiovascular illnesses.1

To ascertain the impact of implemented interventions beyond ambient air pollution reductions, indicators need to be identified and appropriate health data must be routinely collected and made available to air quality officers (AQOs) and environmental health practitioners (EHPs). A discussion document describing such issues was compiled and distributed by the CSIR to all AQOs and EHPs in South Africa to gather their thoughts and comments, particularly with respect to practicability, implementation and uptake of proposed ideas and initiatives.

Here, results from the survey are discussed and using Tshwane as a case study, one proposed indicator is demonstrated.

Methods

A discussion document (Figure 1) describing how AQOs can go about bringing health into air quality management, the relationship between air quality and health and recommended environmental health indicators for air pollution, was e-mailed as a pdf attachment to all AQOs and EHPs, as listed by the Department of Environmental Affairs. Respondents were asked to read through the document and send via return e-mail their comments as well as possible current activities that addressed the ideas mentioned in the discussion document. The first survey was e-mailed on 28 January 2010 with a follow-up survey to non-respondents on the 5 March 2010. Response e-mails were printed and descriptive data (i.e. respondents’ comments) were collated and grouped into five categories: 1) capacity and support; 2) data/statistics; 3) education; 4) steps made already; and 5) concerns.

The most common respondents’ comments were ‘this is an interesting article’ (n = 4) and ‘we agree with this approach’ (n = 7). Respondents’ comments (Table 1) were collated and grouped into five categories: 1) capacity and support; 2) data/statistics; 3) education; 4) steps made already; and 5) concerns.

Table 1: Respondents’ comments on the discussion document

<table>
<thead>
<tr>
<th>Capacity and support</th>
<th>Data/statistics</th>
<th>Education</th>
<th>Steps made already</th>
<th>Concerns</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.4</td>
<td>26.1</td>
<td>13.0</td>
<td>10.0</td>
<td>6.3</td>
</tr>
</tbody>
</table>

The greatest number of comments (n = 11) pertained to data and statistics, in particular, that we need reliable, readily available air quality and air-related health data, currently lacking in South Africa. One respondent mentioned the need to understand the public’s perceptions and air-related health effects which links to the need to raise awareness among society to curb air pollution, especially tire and biomass burning. One respondent in Kosi-Bank-Island mentioned using air-related complaints as an indicator of public health and comparing them to ambient air pollution levels. In the absence of reliable health data, this might be a useful exercise for all AQOs and EHPs across South Africa to carry out.

An example of how this might be done is provided below.

Demonstration of a Proposed Indicator: City of Tshwane Case Study

Public complaints routinely captured about odours, visible air pollution (Figures 3a and 3b) and symptoms perceived to be related to air pollution incidents for January 2005 to December 2009 were obtained by the CSIR from the City of Tshwane Department of Environmental Health. Figures 3a and 3b show the number of complaints per year. A statistically-non-significant downward trend (R² = 0.66) is apparent, however, the data span too few years to confirm this trend.

Figure 3a and 3b: Morning air pollution haze over Pretoria, City of Tshwane

In the absence of reliable health data, a simple exercise to compare air-related complaints with air quality can give some clues to where problems exist.

Figure 4: Number of public air-related complaints per year in the City of Tshwane

Using Geographical Information Systems, these complaints were mapped in relation to five permanent air quality monitoring stations maintained by the City of Tshwane Environmental Management division.

Figure 5: Map of air-related complaints and PM10, PM2.5 and SO2 (3.4 km average) for each permanent air quality monitoring station in the City of Tshwane

Acknowledgements

All AQOs and EHPs who participated in the survey are thanked, together with the Chief EHP for the City of Tshwane, Mrs L van Niekerk, for provision of complaints data.

References


Glossary

Air Quality Information System (SAAQIS) website (www.saaqis.org.za).

Tracking air-related health should be an integrated part of air quality management in South Africa

C Y W I N G T H A N D M A O O D S T U Z E E N

CSIR Natural Resources and the Environment, PO Box 395, Pretoria, 0001, South Africa
Email: cwright@csir.co.za – www.csir.co.za