

PRACTICAL ASPECTS OF TRAINING MUNICIPAL AIR POLLUTION STAFF AND IMPLEMENTING AIR POLLUTION CONTROL

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OPSOMMING:

Die vraag 'Munisipale Lugbesoedelingsinspektoraat: ontvang hulle bevredigende opleiding om hulle pligte doeltreffend uit te voer?' word gevra.

Die Opleiding van Munisipale Lugbesoedelingspersoneel vir die doeltreffende invoering van lugbesoedelingsregulasies is tans sodanig dat heelwat in-diens-opleiding benodig word voordat doeltreffende beheer verkry kan word.

Sommige van die in-diens-opleidingsaspekte wat gedek word is aangeleenthede wat handel oor rookwaarneming, rookbeheer, spuitverf hokkies sand etsing, reuk en stof klagtes, en die inspeksie van stookketeltoerusting, opleiding in wetsaspekte en die gebruik van takt om nakoming van die regulasies te weeg te bring en die afhandeling van klagtes geassosieer met geskeduleerde prosesse word ook beskou.

SYNOPSIS:

This paper poses the question "Municipal Air Pollution Inspectorate : Are they receiving satisfactory training to effectively carry out their duties?".

The training of Municipal Air Pollution Staff for effective implementation of Air Pollution Regulations at present is such that considerable in service training is required in order to achieve effective control.

Some of the aspects of in service training covered are matters dealing with smoke observations, smoke control, spray painting booths, sand blasting, odour and dust complaints and inspection of boiler equipment. Training in the legal aspects and the use of diplomacy in effecting speedy and amicable compliance with the regulations and dealing with complaints associated with scheduled processes are also considered.

Current Training Facilities

The duties of an Air Pollution Inspector can be broadly defined as the control of air pollution by the implementation of legislation. The only training available to Air Pollution Inspectors at present is the part-time Combustion Principles and Practice course offered by the Witwatersrand Technikon and a full time National Diploma in Public Health course which includes the subject of environmental Hygiene. Neither of these courses adequately covers the legal aspects necessary to successfully control air pollution.

The Municipal Air Pollution Inspector needs technical knowledge on the processes that give rise to air pollution and legal and diplomatic expertise in order to successfully achieve the goal of clean air and customer satisfaction.

The Air Pollution Inspector is a jack of all trades, he is required to have a working knowledge of the boiler and its efficient operation together with the air pollution control parameters. He should encourage the Engineer to institute regular efficiency tests as well as improve the standard of training of the firing floor staff, all of which will result in a reduced potential for air pollution. However, when an Air Pollution Inspector arrives at a local authority, and is given the responsibility of implementing air pollution control, it comes as quite a shock to him that his is only one

aspect of air pollution control. He has to attend to complaints concerning sand blasting and spray painting, quarrying and other dust nuisances and odours from a variety of sources. In addition scheduled processes can give rise to numerous complaints which require investigation by the local Air Pollution Inspector in conjunction with the Government Air Pollution Inspector.

From our definition of a Municipal Air Pollution Inspector, namely one who controls air pollution by the implementation of legislation it follows that one needs a basic knowledge of the processes that give rise to air pollution together with a thorough knowledge of the legislation and diplomatic expertise required to successfully achieve the goal of clean air and customer satisfaction.

A successful Pharmacist will tell you that success in a Pharmacy business depends on 10% technical knowledge and 90% business expertise. The Air Pollution Inspector is the business of clean air and the same applies to him.

What basic technical knowledge does one require to effectively implement Air Pollution Control?

The Combustion Principles and Practice Course provides good technical backing particularly the following important sections of the course:-

Combustion Air
 The Three "T"'s
 Steam and heating boilers
 Methods of firing
 Draught
 Boiler House Organisation
 Smoke

In addition, the following technical aspects are helpful to the Air Pollution Inspector:-

Sand blasting and spray booth design requirements
 Odour control techniques
 Local atmospheric conditions
 Monitoring sulphur dioxide, smoke and dust, etc.
 Role of various bodies in the field of air pollution control such as Air Pollution Research Group, State Health, Transvaal Coal Owners' Association, Natal Associated Collieries, Bureau of Standards, Fuel Research Institute and National Association for Clean Air
 Diesel vehicle emissions.

What basic legal and diplomatic expertise does one require to effectively implement air pollution control?

The Air Pollution Inspector requires an intimate knowledge of the Atmospheric Pollution Prevention Act No. 45 of 1965, and the goal which he wishes to attain in his area with regard to smoke control must be achieved through the use of this legislation, where he cannot achieve those goals through the Atmospheric Pollution Prevention Act, for example with regards to dust control, spray painting, emission of odours, he has to have some understanding of what legislation could be used, if any, to achieve the goal of clean air and customer satisfaction. He should be knowledgeable on the red tape necessary in promulgating smoke control zones particularly where the promulgation of smoke control zones is an on going process throughout a large residential area. The Inspector is aware of new industry and new commercial ventures in his area via the submission of plans and licence applications which are normally referred to him for comment. The assistance of officials in the Fire, Building, Health, Licensing and Traffic Departments can be obtained to control air pollution from restaurants, spray painting, sand blasting, furniture industry, general engineering, food factories and diesel engined vehicles. In addition close liaison with the Factories Inspector and awareness of his requirements is also helpful.

Policy of Co-Operation

The Atmospheric Pollution Prevention Act No. 45 of 1965 is based upon the best practicable means and refers to:-

and "the provision and maintenance"
 "effective care and operation"
 of the necessary air pollution equipment
 as well as "any other methods" which "may be reasonably practicable and necessary"

for the protection of any section of the public against the emission of poisonous or noxious gases, dust or any such fumes.

There can be many a slip twixt the cup and the lip and each problem emission needs to be taken up with the responsible person in a spirit of co-operation rather than coercion. The policy involves a service which the local authority provides to industry and the public to reduce pollution, and eliminates nuisance emissions by constant vigilance and follow up to ensure that "provision and maintenance" and "effective care and operation" of the necessary air pollution equipment is carried out as well as "any other methods" which may be reasonably practicable.

To control air pollution the co-operation and confidence of industry and the public must be won. This is done by regular inspections and liaison with factory management, inspection and demonstrations on firing smaller hot water boilers and close liaison and follow up of any complaints by the public.

Control by implementation of legislation

There are many ways of skinning the cat - air pollution can be controlled by legislation other than that framed in terms of the Atmospheric Pollution Prevention Act No. 45 of 1965. The following are some of the ways of implementing air pollution control.

Smoke Control

The use of proforma letters for any contraventions of the smoke control regulations greatly reduces office work.

"Please Advise"

The initial notice served is not a notice in terms of the smoke control regulations, it only draws the attention of the person responsible to the nuisance or smoke emission and requests a reply in a set time and takes the following form:-

Dear Sir,

Smoke Nuisance :

Following complaints of smoke nuisance, one of my Pollution Control Inspectors visited the above premises and found that the trouble originated from the

I must advise that the emission of smoke complained of is causing a nuisance as defined in Section 17 of the Atmospheric Pollution Prevention Act No. 45 of 1965.

Please advise this Department withindays of the measures you proposed adopting to preclude further complaints.
 Yours faithfully.

Should liaison with the person responsible for the nuisance fail to produce a satisfactory response, a follow up letter can be sent advising that failure to take any reasonable steps to abate the nuisance will render the Company liable to prosecution and takes the following form:-

Dear Sirs,

Smoke Nuisance :.....

Following complaints of smoke nuisance, one of my Pollution Control Inspectors visited the above premises and found that the trouble originated from the

I must advise that the emission of smoke complained of is causing a nuisance and in terms of Section 17 of the Atmospheric Pollution Prevention Act No. 45 of 1965, you are hereby given notice to abate the nuisance within a period ofdays from the date of this notice and to take all such steps as may be necessary to prevent a recurrence of the nuisance.

Should you fail to comply with this notice, you are liable to be prosecuted in terms of Section 17(4) of the said Act.

Yours faithfully.

Failure to respond to this notice should seldom occur if satisfactory liaison and discussion takes place with the responsible official of the Company concerned. However should no satisfactory response be forthcoming an official notice in terms of the Atmospheric Pollution Prevention Act No. 45 of 1965 is sent by either delivering a similar letter by hand or by registered post.

In any court proceedings the correspondence and liaison with the offending Company will show that the local authority have sought at all times to obtain the co-operation of the Company concerned.

Because a local authority supplies a service to the ratepayers, a prosecution will only succeed where it can be shown that the respondent has failed to co-operate with the authorities. Further when an air pollution problem is transported into the hazy world of legalism, the nuisance persists for a long time.

Notices in a similar vein in regard to smoke emitted in contravention of the smoke control regulations and zone orders is as follow:-

Smoke in excess of Smoke Control Regulations : Please Advise Notice

Dear Sir,

Notification of Contravention of Smoke Control Regulations:

The smoke emission recorded below from _____ constitutes a contravention of Regulation 3(a) of the Smoke Control Regulations for the City of _____, published in terms of Government Gazette Notice No. _____

Date	Time	Smoke Emission	Remarks

Please advise this Department within _____ days of the measures you propose adopting to prevent further contravention of the said Smoke Control Regulations.

Yours faithfully.

Smoke in excess of smoke control regulations : Registered notice:-

NOTICE IN TERMS OF SECTION 19 OF ACT 45 OF 1965

Dear Sir,

In terms of Regulation 3(a) of the Smoke Control Regulations the emission of smoke of a shade equal to or darker than that referred to in the said Regulation for more than three minutes in any period of thirty minutes is prohibited.

On the date and at the time specified below, the smoke emitted from the premises at _____ was deemed to be in contravention of the aforesaid provision of the Smoke Control Regulations.

Date	Time	Smoke Emission	Remarks

In terms of Section 19 of Act No. 45 of 1965 you are hereby called upon to bring about, within a period of _____ days from the date of this notice, the cessation of the emission smoke whereby the said Regulation is contravened.

Unless this notice is complied with within the period specified, criminal proceedings will be instituted.

Yours faithfully.

Smoke in excess of zone order limits:
Please advise notice:-

Dear Sir,

*Notification of Contravention of the Order
Declaring Smoke Control Zones*

The smoke emission recorded below from _____ constitutes a contravention of Paragraph 2 of the Order Declaring Smoke Control Zones for the City of _____ published in terms of Provincial Notice No. _____

Date	Time	Smoke Emission	Remarks

Please advise this Department within _____ days of the measures your propose adopting to prevent further contravention of the said Order.

Yours faithfully.

*Smoke in excess of Zone Order Limits : Registered Official
Notice*

REGISTERED POST

*NOTICE IN TERMS OF SECTION 19 OF
ACT 45 of 1965*

Dear Sir,

Smoke Control Zone

In terms of Paragraph 2 of the Order Declaring Smoke Control Zones for the City of _____ published in terms of Provincial Note No. _____, the emission of light smoke from premises situated in a zone as defined in the Schedule to the said Order is prohibited.

On the date and at the time specified below, the smoke emitted from the premises at..... which premises are situated in a zone as defined in the Schedule to the said Order was deemed to be in contravention of this provision of the said Order.

Date	Time	Smoke Emission	Remarks

You are hereby called upon to bring about, within a period of _____ days from the date of this notice, the cessation of the emission of smoke whereby the said paragraph of the Order is deemed to be contravened. In terms of Section 20(11) of Act 45 of 1965 a contravention of the aforementioned Order constitutes an offence and unless this notice is complied with within the period specified criminal proceedings will be instituted.

Yours faithfully.

Smoke Observations

Engineers generally take great pride in the care and maintenance of equipment placed in their charge and it is useful to generate some healthy competition amongst Engineers by circularising firms in the same fuel consumption group with all the observed smoke emissions for each firm for the past month. A covering letter which accompanies the "Order of Merit" lists is as follows:-

Dear Sirs,

Smoke Emission Report

Observed smoke emissions count as 1, 2 or 3 smoke points against firms as the smoke density increases from light to dark to black. The total points against firms in your fuel consumption group for the current month and year are listed overleaf in order of merit. Please refer this report to the persons concerned with the operation and maintenance of your fuel burning appliances.

Firing system is denoted by

- C : Coal hand fired
- M : Coal mechanically fired
- F : Fuel oil
- FG : Fuel oil and gas
- W : Woodwaste

Note: No fuel burning appliances or incinerators can be installed and no chimney can be erected without the prior approval of the City Engineer.

Yours faithfully.

Garden Refuse Fires

These can be controlled by circularising residential areas by hand or through the water and electricity account advising of nuisance arising from refuse fires.

Such a notice could take the following form:-

INFORMATION CIRCULAR

GARDEN REFUSE FIRES

Complaints of nuisance caused by smoke and soot from garden refuse fires are frequently received by this Department. Such smoke greatly increases the pollution of air in the City.

It should therefore be noted that the burning of garden refuse in such a manner as to create smoke or soot particles is not allowed in terms of the City Council's Smoke Control By-laws. Any person contravening these By-Laws renders himself liable to prosecution.

Persons wishing to dispose of garden refuse should contact the City Engineer's Cleansing Section (Telephone _____), which, for a nominal charge, operates a special service for the collection and disposal of such refuse.

Spray Booths

All licence applications are reviewed by the Air Pollution Control Inspectorate. Should anyone wish to do spray painting, the licence is approved subject to a spray booth being installed before discharge atmosphere at such a height as approved by the Inspector. It is the Air Pollution Inspector who initiates the requirement of a spray booth. Once he has initiated it his main concern is to approve the ducting to atmosphere and to ensure that satisfactory filtering of the air is effected before discharge to atmosphere, preferably removable filters to facilitate easy cleaning, in addition, any existing windows should be sealed.

On completion of the spray booth the Inspector will then have to carry out inspection to ensure that the filters are cleaned regularly. In cases where a nuisance has arisen due to poor control or removal of the filters and property has been damaged, it is up to the complainant to seek recompense by instituting a civil action against the people who have emitted the paint fumes. This does not often occur but it shows the necessity for regular inspection of spray booths to see that they are properly operated.

Ducting from Cooking Areas

The Air Pollution Control Inspector has to attend to odour complaints which arise from restaurants. Where a canopy over a cooking area is required in terms of Health Regulations the fumes must be ducted to atmosphere in such a way that no nuisance is created. If the building has a centralised duct for taking such odours to the apex of the building then this is the answer. Perhaps the ducting can be vented straight out at the rear of the restaurant providing there are no buildings at the rear that could be affected. If neither of these is possible then it might be necessary to install an activated carbon filter on the exhaust ducting from the cooking area. In addition there should be a set of oil

filters at the inlet to the ducting which require regular cleaning to ensure that there is no build up of oily components in the ducting which can generate a lot of odours. The licence after suitable inspection and advice to the owner is then endorsed "Approved subject to the fume, dust and odour control being to the satisfaction of the City Engineer at all times". The approval is not done strictly in terms of the Atmospheric Pollution Prevention Act but is never the less ducting to atmosphere which could give rise to complaints. It is necessary with the installation of carbon filters to ensure that there is regular maintenance preferably by way of a service contract. The exact way that the owner of the restaurant wishes to duct the odours is left open to him as the cost can be quite considerable in taking the ducting to the apex of a large building. On site inspections are carried out to see whether in fact odour nuisances will arise and in some instances low discharge are allowed to certain cooking odours with a proviso that should a nuisance occur the ducting will have to be either extended or charcoal filters installed.

Dust and Grit Complaints

A large percentage of time can be devoted to following up of complaints and it is necessary that the source of complaints is speedily identified. The use of a dust fallout box can be used to collect samples and is basically just a plastic lunch box with sticky tape placed on the outside of the box. The dust adhering onto the sticky tape will give an indication of the direction from which the dust comes. The dust collected inside the box will give an idea of the severity of the fallout and examination under a stereoscopic microscope should identify quite clearly whether the dust is in fact from a pulverised fuel, chain grate, or underfeed type boiler or is general wind-born dust, quarry dust or coal yard dust. Where a known source of dust emission does occur it is helpful to place these dust boxes at strategic points and any control measures instituted by the factory can be evaluated against these dust fallout measurements. Further analysis of the dust can be made for percentage combustibles should facilities be available for these but it is not always essential. It is also helpful to do dust measurements over the day time and over the night time thus boxes can be placed at a site and two can be left there, one open during the day time and one open during the night. This gives some idea of the dust emission during the actual operation of any equipment that does give rise to large quantities of dust. In assessing dust it is also helpful to have a background station with which the measurements can be compared. It was useful to evaluate the dust fallout at a hospital in Durban and compare it with dust fallout from an asphalt plant and a nearby power station, as well as, fallout from the boilers of the hospital. It was possible to show that a large percentage of the fallout at the hospital area was in fact occurring from the boilers of the hospital and not from other sources in the area. These investigations led to the hospital installing more efficient grit arrestors and the fallout nuisance at the hospital has now been abated. Investigations of the nature and quantity of dust fallout, together with the wind direction are helpful in

showing the complainant the origin of dust and effective decisions can then be taken to eliminate the nuisance. Some boilers were installed prior to the Air Pollution Act and did not in fact have the effective grit arrestors. Where dust nuisance has occurred from a boiler it has been helpful to evaluate measures taken to reduce the fallout by the use of dust boxes, and the Company have been able to eliminate the nuisance without effecting major alterations. So to sum up the measurement of dust fall is a very useful tool in evaluating dust nuisances and the cost is not excessive. There is a useful booklet that can be purchased in which dust fallout from various sources are shown in colour photographs and these can be used as references. In addition samples can be collected from various known sources as comparative samples.

Odour Control and Odour Complaints

Odour complaints can take up a considerable period of time. The average person is extremely sensitive to odours and associates any particular unusual odour, with dangerous levels of pollution which can affect his health which is very seldom the case. In many cases the complainants suffer from respiratory illness or have a history of respiratory illness so their concern is appreciated. The identification and elimination of odours is not as simple a job as it sounds. It is to be expected that any industrial process can give rise to odours and depending upon the prevailing wind conditions these odours could give rise to nuisance despite the best practicable means being used to abate air pollution. The Pollution Control Inspector must be prepared to follow up odour complaints whenever the odours occur in order that the source can be traced. Representations can then be

made for practicable solutions to reducing the odours. It must be stressed that at no time can the residents be assured that the odours can ever be completely eliminated. Secondly it is necessary to assure the complainants that where the odours are due to inefficient control of a particular industrial process that this has been taken up with the management of the industry concerned and that positive actions on these aspects are definitely being taken. Elimination of odours can be costly and the necessary alterations can take time to implement.

Conclusion

From the foregoing it is obvious that none of the existing formal courses, relevant to the training of Air Pollution Inspectors, can fully prepare a new inspector for the extensive range of duties and situations which he will encounter in practice. While it must be conceded that most training courses require expertise in the actual position before a man can be regarded as fully competent in his field, there does appear to be a severe gap in the present courses offered, which tend to concentrate on the smoke control aspect only, and urgent consideration should be given by the appropriate authorities for the introduction of either a suitable course covering the whole gamut of expertise required by a Pollution Control Inspector or the preparation of a suitable booklet which can be issued to inspectors and used for ready reference in the field. The opinion of delegates on this matter would be appreciated and it would be interesting to hear from the overseas delegates whether they are aware of any suitable courses, or books in existence in their own countries which may be of assistance and guidance to the South African authorities.