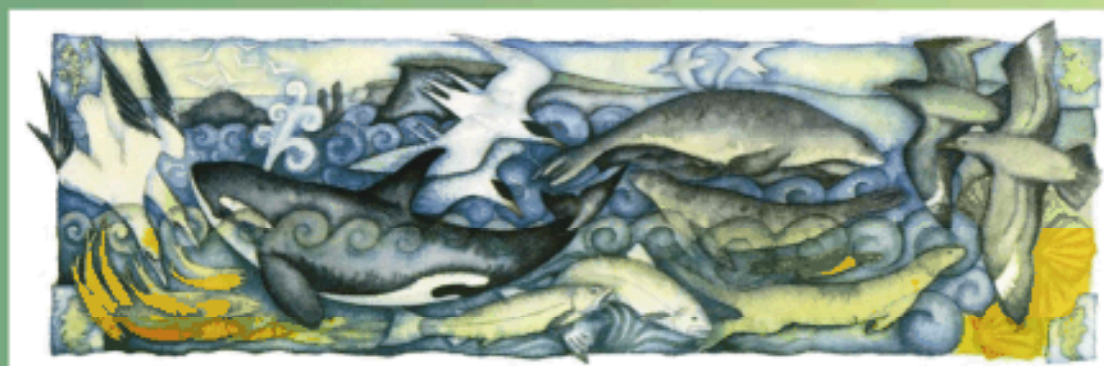


GOOD PRACTICE GUIDE SERIES

K I M O



KOMMUNENES INTERNASJONALE
MILJØORGANISASJON



Good Practice Guide for Local Authorities on the use of Pesticides in Amenity Areas

A checklist has been produced to accompany this Manual and is available from KIMO upon request or from the website www.zetnet.co.uk/coms/kimo

Manual

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Summary

This Manual is accompanied by a Checklist and is one in a series of Good Practice Guides produced by KIMO. The aim of this Manual is to show local authorities the best possible methods of reducing pesticide usage whilst maintaining a reasonable level of weed control.

Pesticides have been in use for over half a century. They have intrinsic properties of toxicity and persistence and can have adverse effects on marine life resulting in potential hazards to public health.

As part of this research a questionnaire was sent out to 127 UK local authorities and the results indicated that very few authorities had a pesticide policy or used non-chemical alternatives. Therefore there is a need to produce such a guide to assist local authorities in developing a pesticide policy for amenity areas. The Manual should complement commitments by the EU and North Sea Ministers in the Bergen Declaration Chapter V paragraph 59(iii) which agrees “to promote the application of OSPAR Recommendations 2000/1 (agricultural use of pesticides) and 2000/2 (amenity use of pesticides) by pesticide users in their countries, and recognise the contribution to be made by organic agriculture to reducing pesticide use”.

The Manual and Checklist will assist local authorities in reducing and eliminating pesticide usage, if possible, through: -

- Completing an audit of current practices
- Indicating ways to alter practices to reduce usage
- Assessing potential environmental problems arising from using chemical control
- Researching non-chemical alternatives
- Reviewing current purchasing policies
- Producing a risk assessment
- Producing a pesticide policy

Introduction

Background

Synthetic chemical pesticides have been in use for nearly half a century in the control of agricultural, public health, amenity and industrial areas. Pesticides are the only group of chemicals that are designed to be toxic to living organisms and are intentionally dispersed in the environment. The result of their extensive use over the years has been manifested in many ways including the reduction of farmland biodiversity. One of the main sources of hazardous substances in the marine environment is a result of inputs from diffuse sources, in particular run off from agricultural land, industrial sites and built up areas. These chemicals in the marine environment can have an adverse effect on marine life and can affect the food chain resulting in a potential hazard to public health.

Awareness of the potential hazards associated with pesticides has existed since the early 1960's and much has been done to control the trade and use of pesticides. The use of some pesticide types has diminished considerably over the years due to resistance, phasing out and bans, however the continual introduction of new pesticides has resulted in no overall reduction in the total usage. Moreover, whilst some of the health and environmental problems associated with pesticides have been addressed in the developed world, many of these serious problems continue to plague the people and the environments of the developing world. The World Health Organisation states that around three million people suffer from pesticide poisoning each year (*Pesticide Action Network, 2002*).

Pesticides have intrinsic properties of toxicity and persistence. There is clear evidence that a diverse range of natural and man-made substances, including banned TBT and PCB's, have a potential to impair the reproductive process in aquatic organisms. For example, some substances can interfere with the endocrine systems of marine animals and studies have shown that these effects can occur at very low concentrations. They are also liable to bioaccumulate in the food chain and thus may have adverse effects on public health. Pesticides currently in use may also have similar endocrine disrupting effects.

This Manual has been produced to help local authorities reduce their pesticide use and run-off and thus reduce the harmful effects of pesticides on the marine environment.

Definition

A pesticide is any substance, preparation or organism prepared or used for destroying any pest i.e. weeds, insects, diseases, rodents, moss and algae.

Pesticides include: -

- ***Insecticides that kill insects***
- ***Herbicides that kill plants***
- ***Fungicides that kill fungal diseases***
- ***Rodenticides that kill rats and mice***
- ***Acaricides that kill mites***
- ***Molluscicides that kill snails and slugs***
- ***Nematocides that kill eelworms and threadworms***
- ***Avicides that kill birds***
- ***Anti fouling agents to prevent fouling from marine organisms***

Pesticides also include substances that:-

- ***Retard plant growth (growth regulators)***
- ***Act as defoliants (remove leaves)***
- ***Act as desiccants (speed plant drying)***
- ***Repel or attract insects (repellents and attractants)***
- ***Act as insect growth regulators (IGRs) (reduce insect growth)***

(Lang, T and Clutterbuck, C 1991)

A weed is any plant that grows wild and profusely. (Collins English Dictionary 2001)

The purpose of this Manual

This Manual has been specifically produced to explain the issues surrounding pesticide use in amenity areas. Although there is legislation governing the use of pesticides in agriculture there are few guidelines regarding the use of pesticides by local authorities or other amenity users. The Manual also covers alternatives to using pesticides where possible and shows local authorities the best possible methods of reducing pesticide usage whilst maintaining a reasonable level of weed control.

One of KIMO's objectives is to reduce and ultimately eliminate the hazards to health and to the environment from pollution. This Manual gives guidelines to coastal local authorities to monitor and ultimately reduce their pesticide usage and to consider other environmental methods. However, it is not meant as a technical manual but only as a guide to aid in the formulation of pesticide policies or plans.

The application of this manual

This Manual is intended to give guidance on the use of pesticides by local authorities. However, since different countries vary in terms of their policies, procedures and areas maintained, all sections of this Manual may not be relevant to all local authority circumstances.

The information contained in this document was correct at the time of publication, to the best of our knowledge. This Manual is meant only as a guide and KIMO assumes no responsibility for any action, inaction or omission that might arise as a result using of this guide.

Why have a pesticide policy or procedure?

The potential benefits of having a pesticide policy or guideline is that it allows local authorities to: -

- Reduce exposure to humans and wildlife
- Have effective and efficient procedures in advance of any pesticide operations
- Limit the types and quantities of pesticides used within authorities areas and thus reduce costs
- Reduce pollution to watercourses and surrounding seas
- Promote their concerns for the environment and public health
- Develop adequate and appropriate training for staff using the products

What are the aims of the manual?

- To provide guidance to local authorities in using alternatives to chemicals for weed control in amenity areas
- To identify the most appropriate and successful method of application if non-chemical methods are unsuitable
- To provide guidance to those developing environmental policy for local authorities
- Ultimately lead to a pesticide free authority

What are the objectives of the manual?

- To identify the need to reduce pesticide use in amenity areas
- To provide a framework which local authorities can use to reduce their overall environmental impact
- To define roles and responsibilities throughout the authority
- To identify the legal responsibilities in the use and disposal of pesticides
- To identify the areas that require treatment
- To define training requirements by law
- To define mobilisation procedures for best practice
- To address the main health and safety aspects
- To be an accessible work of reference to this complicated subject
- To identify notification procedures

- To interact successfully with other relevant plans
- To show how monitoring systems can be developed and implemented
- To identify procurement procedures

SECTION 1

Auditing

Local authorities should complete an audit of their current practices, areas under their control and assess their policies on chemical weed control.

(1) The first part of the audit should identify those areas where local authorities undertake weed control. They should assess: -

- What the areas are used for
- How frequently the areas are used
- Their location in relation to the public e.g. residential properties
- Location in relation to watercourses
- Type of surface, hard or soft
- What type of grass or material covers the area

(2) The next stage in the audit is to identify the areas being chemically treated. This should assess: -

- The type of weed that is causing the problem
- The type of chemical that is used e.g. pre-emergent, residual, non-residual herbicide, pesticide, fungicide
- How frequently the area is treated
- Whether the pesticide is in liquid or granular form
- What application method is used
- Volumes of chemicals

(3) Also the auditor must report on the areas that do not receive chemical treatment and state: -

- Why the areas are not treated
- What methods, if any, are carried out to control weeds

(4) Local authorities should focus on the reasons why they use chemicals to treat the areas and assess: -

- The types of methods used in the past and present
- Views and public opinions on the chemicals being used
- Other possible ways to manage the areas without chemicals

One of the most important parts of the audit is the completion of a report on the potential impacts to public health and the environment.

The audit should assess and identify all the brands of chemicals being used and check that the chemicals are certified and are being used/applied correctly. All sensitive areas should be identified, assessed and treated in accordance with any regulations.

An assessment of the disposal and storage methods should be carried out. The local authority should abide by the national regulations and store/dispose of empty containers and spent pesticides accordingly. It should assess: -

- How spent pesticides and containers are treated and disposed of
- How washings from containers are treated and disposed of
- How spent pesticides and containers are transported
- The nature and state of current storage facilities
- Whether its storage facilities are appropriate and meet regulation requirements
- Vehicles transporting pesticides to and from operations to ensure that they are appropriate for transporting dangerous chemicals
- Whether they have the correct storage boxes on board
- Whether all employees involved with the disposal of pesticides are trained to national regulations
- Whether its purchasing policy includes buying environmentally friendly products
- Whether internal and external contractors meet all necessary regulations
- Whether there are specifications set in the contracts

SECTION 2

Policy

Justification

Local authorities are coming under increasing environmental and economic pressure partly arising from legislation at both European and national level. This has forced local authorities to become increasingly aware of the issues surrounding pesticides. National legislation may require all pesticide users to become more accountable and responsible indicating the need for a pesticide policy within local authorities.

Local authorities that have pesticide policies should review their current procedures in order to be confident that they comply with any changes to legislation, training requirements, storage and disposal of pesticides. They should also take into account new developments in terms of chemical reduction practices and non-chemical alternatives and revise their policy accordingly.

Assessment report

Local authorities that do not have a pesticide policy should develop one. In order to develop such a policy, an evaluation of the current usage, procedures etc will be required. Therefore a Council-wide assessment (audit) of current practice should be undertaken. This assessment should identify if any pesticides are being used within the areas under Council control.

Whilst developing a pesticide policy local authorities should consider reducing their current pesticide use as a precautionary measure in the interim period. Local authorities should also consider what the ultimate aim of their pesticide policy would be. For example a local authority may wish to aim towards one of the following outcomes: -

- Stop using pesticides immediately
- Pesticide reduction policy over a defined period
- Only use pesticides in extraordinary circumstances
- Set an ultimate goal for a pesticide-free authority

With each of these stages there are positive and negative outcomes that local authorities should consider.

Cessation of pesticides use immediately

The positive aspects are: -

- No pesticide run off
- No pesticide training costs
- No procurement, storage and disposal costs
- Improved public attitudes

The negative aspects are: -

- Visual impact (no weed control)
- Higher labour costs
- Damage to infrastructure
- Negative public attitudes

Pesticide reduction strategy

The positive aspects are: -

- A targeted approach
- A progressive reduction in pesticide run off
- Reduction in pesticide costs
- Visual impact of the areas not immediately affected
- Public attitudes

The negative aspects are: -

- Continued pesticide run off
- Higher labour costs
- Local authority are still using pesticides
- The cost of maintaining training requirements
- The cost from using, storing and disposing of pesticides

Pesticides used in extraordinary circumstances

The positive aspects are: -

- Reduced pesticide run off
- Only severe weed problems controlled by pesticides
- Reduced pesticide costs
- A positive public attitude

The negative aspects are: -

- Local authority is still using pesticides
- Potential pesticide run off
- Higher labour costs
- The cost of maintaining training requirements
- The cost from using, storing and disposing of pesticides

Pesticide free authority

The positive aspects are: -

- No pesticide run off
- No training costs
- No storage and disposal requirements
- A positive public attitude

The negative aspects are: -

- Higher labour costs
- Potential visual problems from weeds

Recommendations and consultation

Once an assessment of current operating procedures is complete it should be circulated to the relevant departments for comments and a report produced for the relevant decision making body. The assessment report should include financial implications and identify any operational problems that may occur. Once approved by the appropriate body the draft Pesticide Policy should be subject to public consultation. After this public consultation the draft policy should be reviewed by the local authority members and adopted.

The agreed policy should be issued to the relevant departments and a nominated officer should be responsible for its implementation. The effectiveness of the policy should be reported every three years and a review should be undertaken to ensure that any new legislation is being implemented. Local authorities should also take into account any new techniques and non-chemical alternatives that could be incorporated into the policy to maintain the ultimate goal of a pesticide-free authority.

SECTION 3

Risk Assessment

One of the first essential fundamental steps that a local authority should undertake in developing adequate pesticide strategies is to carry out a pesticide risk assessment of its current policies and operational procedures.

Physical assessment

It is unlikely that all resources at risk can be successfully protected. Therefore, after identifying sensitive resources e.g. watercourses, water supplies and environmentally sensitive areas, local authorities should be in a position to determine those most effected in order that they can be protected.

In determining a pesticide policy, local authorities should also take into account public concern. An appropriate balance should be taken between the environmental priorities, amenity demands and economic values of the local community.

Once a physical risk assessment has been carried out, the information gathered should be reproduced in map form to be annexed to operational plans, together with a summary of the details on important features and the location of sensitive resources.

Why a risk assessment is important

The development of a sensitivity map of the environment prior to the use of pesticides is extremely important. Gathering such data will help to determine potential points of damage from chemicals, what resources are at risk, what damage might be done to those resources and thereafter help decide upon appropriate methods of working.

Furthermore, information of this type can be used as a basis for assessing the impact of accidental or misuse of pesticides. This may be useful, evidential material in formulating claims for cost-recovery and in the event of any legal action that might arise.

What are factors need to be taken into account?

A pesticide risk assessment is a very complex task and the detailed requirements will vary from one area to another depending on the extent and type of chemicals used and areas to be covered. However, it is important to identify the following factors, which are important in the assessment of the potential harm that chemicals may cause.

- Potential sources of pollution
- Types of chemicals handled
- Likelihood of a chemical spill
- Sensitivity of the area
- Physical features of the treated areas
- Time of year – seasons
- Accessibility to areas of the coastline and likelihood of contamination
- Weather – winds, tides and climates
- Surface water and groundwater flow direction
- Geographic location
- Frequency of handling
- Potential size of a chemical spill
- Quantities handled

Are all sensitive areas identified? – Environmental, commercial and recreational

In carrying out a risk assessment all sensitive areas likely to be adversely affected by pesticide use need to be identified. This includes areas that are important for their environmental, commercial or recreational purposes.

In order to identify these areas, consultation should be carried out with all users of the areas. This should include commercial businesses, fishing and agricultural sectors and environmental groups. Concerns may include: -

Environmental: -

- Estuaries
- Fish/spawning grounds
- Bird breeding/flocking areas
- Plankton
- Marine mammals
- Environmentally sensitive areas
- Local Nature Reserves
- Marine Nature Reserves
- Special Areas of Conservation
- Special Protection Areas

Commercial: -

- Fish farms and fishing
- Other mariculture
- Land and agriculture
- Water intakes/extraction

Recreational: -

- Tourists/amenity beaches
- Bathing beaches
- Sports grounds
- Parks/play grounds
- Walk ways
- Marina
- Canals

Medical: -

- Public health issues

Others: -

- Housing estates
- Roads and highways

SECTION 4

Legislation Regarding Pesticides

The European Commission governs the trade and licensing of pesticides in Europe. It is committed to removing barriers to trade and protecting people by proposing common rules on health and safety. This is part of the 1992 agreement, which followed the passing of the Single European Act in the 1980's. In Article 100a the EC has a strong commitment to set high levels of environmental, consumer and public health protection and require European Members to implement them (*Lang, T and Clutterbuck, C 1991*).

Pesticides (mainly agricultural) have been heavily regulated for many years to control potential pollution in public water supplies, human health and the environment. The EU Drinking Water Directive set stringent limits for pesticide levels in drinking water i.e. a maximum of $0.1\mu\text{g l}^{-1}$ for individual pesticides and total pesticides must not be higher than $0.5\mu\text{g l}^{-1}$.

The objectives of the Water Framework Directive 2000/60/EC must be met throughout EU member states by 2015 and the Directive establishes a framework for the protection of all waters. The European Commission have formulated a list of priority pollutants, which will be controlled under the Water Framework Directive.

The EU Pesticide Directive and national regulations require manufacturers to register pesticides before the public can use them. The Plant Protection Products Directive (91/414EC) Annex I lists all the active substances that show no unacceptable adverse effects to humans. A pesticide will only be authorised if it is: -

- Sufficiently effective
- Has no unacceptable effects on plants
- Has no harmful effects on humans or animal health
- Has no unacceptable influences on the environment

Once the pesticides are registered, they undergo a series of reviews as new information becomes available and their effects on, and possible persistence in, the environment are monitored.

Local authorities should only use EC approved pesticides and they should check that all the products they are purchasing and using are not on the banned register in order to prevent serious public and environmental damage.

All local authorities should ensure that all employees who use pesticides in the course of their work have received adequate instruction, training and guidance in the safe, efficient use of pesticides.

Everyone involved with the use of pesticides must comply with the relevant national legislation and keep up to date with the following aspects: -

- The relevant legislation

- The hazards and risks posed
- Safe working practices
- Emergency action plan
- Health surveillance
- Record-keeping
- The use of application equipment
- Disposal regulations

SECTION 5

Health and Safety

When applying pesticides, either by hand held applicators or by spraying machines, training is essential. To reduce risk to the operator, the public and the environment, proper training must be completed prior to any application. The local authority should make sure that all employees' operating/handling pesticides are trained under the relevant national legislation and refresher courses should be undertaken on a regular basis. For instance in the UK, under the Control of Pesticides Regulation 1986 (COPA), all operatives born later than 31/11/1964 must hold a Certificate of Competence that is issued by the National Proficiency Tests Council (NPTC).

The following guidance is relevant under all national legislation and should be followed by local authorities: -

(1) Labelling

Read the label carefully on the containers and fulfil the relevant legal requirements to comply with its contents regarding: -

- Weed, pest or disease that may be treated
- Maximum dose rate of product
- Operator protection and training
- Environmental protection

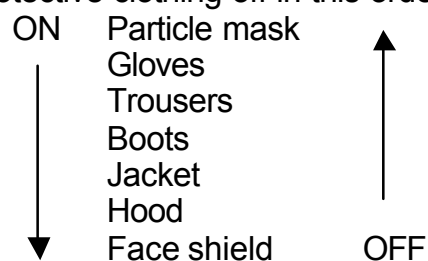
(2) Protective clothing

(a) Operatives must wear no less than the protective clothing specified on the product label when handling concentrated or diluted pesticides. The items of clothing concerned may include: -

- Face shield with anti-mist fluid
- Particle mask (change as recommended by manufacturer)
- Coverall, trousers, hood, gloves and boots (all pesticide resistant)

The local authority or contractor should have adequate washing facilities and a first aid kit available at all times.

(b) To avoid contact with contaminated surfaces the operative should put on and take the protective clothing off in this order: -



(Adapted from SNH Health and Safety Policy on Pesticide Use)

- (c) Before attending to personal needs, remove gloves and any other protective clothing that could cause contamination. Wash hands in soap and water and dry thoroughly.
- (d) Do not eat, smoke or drink when working with pesticides unless the hands and face have been thoroughly washed.
- (e) At the end of each work period wash and remove all protective clothing.
- (f) Where reasonably practical an artificial running water supply should be used for washing purposes. If this is impractical different water and wash bowls should be used for protective clothing and for personal washing.
- (g) Always put on, take off, hang to dry and store protective clothing away from rest and eating places, stored personal clothing, and personnel areas of vehicles and sources on contamination.
- (h) Always replace damaged items promptly, especially gloves.

(3) Pre application procedures

- (a) Only use pesticides if no alternative is appropriate.
- (b) Always use the pesticide, which presents the least risk to health and the environment while achieving optimum effect on weed control.
- (c) Check the precise location of any domestic water supply, rivers, streams, ditches or ponds. The operative must leave a suitable buffer strip to avoid contamination.
- (d) Check information on locations of watercourses, ponds, lakes, ditches, surface catchment areas, underground waters, bore holes, wells and springs is available and correct.
- (e) Make a list of emergency services in case of an accident.
- (f) Check wind speed is within the prescribed limits for the pesticide concerned and surrounding area.
- (g) Check and allow for wind direction to reduce drift and contamination with any watercourses and the public.
- (h) Try to underestimate the amount needed for the operation to reduce surplus spent pesticide and over dosing. A smaller area is easier to estimate amount than a larger area.
- (i) Identify safe areas for mixing pesticides, diluents and for filling applicators. Make provisions to deal with accidental spillages.
- (j) Mix strictly in accordance with the label instructions and never mix different pesticides in the same container.
- (k) Ensure the applicator is free from leaks, in good working order and is suitable for the work.
- (l) Calibrate applicator carefully using plain water i.e. by selection of nozzle, pressure or walking speed to achieve the correct application rate.
- (m) Ensure spares and accessories are available, e.g. replacement nozzles, seals, washers, maintenance tools and calibration equipment.
- (n) Ensure supplies of fresh water will be available for dilution and washing.
- (o) Identify area for washing protective clothing and applicators. Make provision for safe disposal/removal of washing water.

- (p) Erect warning notices for the benefit of the public. Check label for re-entry stipulations.
- (q) Ensure the public, beekeepers and any other appropriate persons have been informed in advance of any application.
- (r) Handle wettable powders carefully to avoid dust clouds.
- (s) Wash out empty liquid concentrate containers carefully avoiding any run off from the wash area.
- (t) Either return used containers to the manufacturer or place in an adequate refuse area for used containers.

(5) Spraying

- (a) When putting on a knapsack sprayer, stand it on a support or get assistance to avoid spillage.
- (b) Minimise walking through treated areas.
- (c) Leave a suitable buffer strip.
- (d) Cease spraying if the wind speed exceeds range specified or changes to an unsuitable direction.
- (e) Stop if you see anyone approach from the “down wind” side.
- (f) Depressurise sprayers before carrying out maintenance.
- (g) Keep gloves on when removing nozzles.

(6) After spraying

- (a) If there are any surplus pesticides at the end of the operation return the container to the supplier for disposal.
- (b) Wash out empty applicators and nozzles in the provided washing area and ensure the washings do not contaminate surrounding watercourses.

SECTION 6

Labelling on Pesticide Products

The label of a pesticide product is the means by which the user is informed of the requirements for the safe and proper use of the product and its eventual disposal. It is essential that the label is understandable and legible. The EC Directive 88/379/EC, which has been recast to 99/45/EC, relates to classification for packaging and labelling of non-agricultural pesticides.

Label content

Local authorities should only purchase pesticides that are legal and have the following details on the label to verify authenticity: -

- Trade or proprietary name
- The common name(s) of the active ingredient(s)
- The net quantity of the preparation
- Brief statement on biological use
- Guidance on statutory conditions
- Precautions – standard risk and safety phrases
- Precautions heading 'X' is an organophosphorus or carbamate compound and must not be used by persons who are under medical advice to avoid such compounds
- Storage information
- Directions on using the product
- Name, address and telephone number of the marketing company
- Relevant health and safety regulations when applicable
- Statement on first aid and guide to doctor or poisons centre

In the case of dangerous products, local authorities should understand and be aware of the important details relayed on the label: -

- The name and amount of each active ingredient
- The appropriate symbols i.e. toxic
- A warning that the container or pack must not be re-used
- A batch number either on the label or container

The layout of the information on the label must be clear and concise. The words "precaution", "toxic", "harmful", "risk of serious damage", "may cause sensations", "in contact with eyes" and directions must be in capital letters and in bold. If some or none of this information above is relayed in the label the container must not be used in any pesticide operation under EC Directive 99/45/EC.

SECTION 7

The Legislation Governing the Storage of Pesticides

In the UK there are a number of legal requirements governing the storage of pesticides. The legislation that covers storage of pesticides in the UK is mainly contained within the Health and Safety at Work Act 1974, Control of Pesticides Regulations 1986, Fire Precautions Act 1971 and the Dangerous Substances (Notification and Marketing of Sites Regulations 1990). Similar legislation should exist in other member states and must be followed.

Storing pesticide containers

Where pesticides are mixed with diluters, carriers (water or oil to help the pesticide stick to plant), all the resulting tank mix should be used immediately and should not be stored. Any leftovers should be disposed of properly. Storage of approved pesticides is only permitted in the container provided for that purpose and under a label approved by the appropriate authority.

Certificate of competence

Local authorities should comply with relevant national legislation in the storage of pesticides. For example in the UK the storage, sale or supply of amenity pesticides in quantities of over 200kg or 200 litres should be by or under the control of someone who holds the BASIS Certificate of Competence in the Storage and Handling of Crop Protection Products (Store Keepers Certificate).

Criteria for all pesticide stores

All stores, whether they are major buildings, stores within buildings, small self-contained, prefabricated stores or vehicles used for pesticide storage should be: -

- Suitably sited
- Soundly constructed of fire-resistant materials
- Of adequate storage capacity
- Provided with suitable entrances and exits
- Suitably lit and ventilated
- Capable of containing spillage and leakage
- Dry and frost free
- Marked with appropriate warning signs and secure against theft and vandalism
- Equipped, organised and staffed to accommodate intended contents

SECTION 8

Disposal of Spent Pesticide

The handling and disposal of solid, liquid and gaseous waste pesticides and their containers are controlled by a number of statutes throughout Europe. Employers must take the proper precautions and abide by national regulations and legislation to ensure that they are not breaking the law.

Persons concerned with controlled waste i.e. household, commercial or industrial waste should be aware of their legal responsibilities and ensure that any waste they produce will be disposed of properly. The labelling of the product states the precautions and safety aspects that must be undertaken. For example in the UK the Special Waste Regulations 1996 states that all movements of special waste must be tracked until they reach the appropriate waste management facility.

Throughout Europe, under most national regulations, it may be an offence to cause or knowingly permit poisonous or noxious polluting matter to enter any controlled waters. These controlled waters include rivers, lakes, groundwater and coastal waters.

Ways to minimise the production of pesticide waste

Local authorities use pesticides within areas such as parks, industrial areas, roadside verges, motorways, railway embankments, sports grounds and footpaths etc. They mainly use herbicides to combat weeds such as nettles, docks and dandelions. An assessment of what pesticide would be most effective and in what form i.e. liquid, pellets or aerosol is needed during the planning stage. Once a decision has been made, an estimate on the quantity and package size is required and a consideration on the safe disposal of any surplus and storage is needed. Many companies that supply pesticide products, containers and equipment, will collect and dispose of any surplus, out of date or unwanted pesticides as they have the specialised facilities to deal with these wastes.

The volume of washings from cleaning out equipment can be reduced by as much as 90% by using an efficient flushing system as opposed to filling the spray tank with water and pumping it through the equipment.

Ways to avoid spillage

(Adapted from Orange Code of Practice)

To reduce the risk from spillages and contamination to soil, surface water or groundwater, all filling and washing operations should be carried out in an area designated and constructed for that purpose. One tablespoon of spilled pesticide concentrate could pollute the water supply of 200,000 people for a day (*Pesticide Action Network 2002*). A leak-proof metal tray that has been treated to avoid reacting with certain pesticides should be provided. The tray should be sufficiently mobile to be used at different sites. However, suitable arrangements will have to be made to collect spillage into a container for later disposal.

How to reduce surplus diluted pesticides

The disposal of surplus pesticides used for treating amenities sites differs from that used in agriculture because of the different legislation governing the separate industries.

One method of reducing surplus pesticide at the end of work is to mix slightly less than the area requires. When the mix runs out the remaining area can then be calculated more accurately. On completion of spraying, all equipment involved in the operation should be cleaned, washed and rinsed. The facilities provided should be designed to ensure the back syphoning of pesticides into the water supply cannot occur. These activities will lead to a large amount of water contaminated with low concentrations of pesticides. When it is possible the contaminated water should be used later to dilute a further batch. Other possible ways to dispose of surplus diluted pesticides include -:

1. To use the surplus on another similar area covered by the conditions of approval of the product. Areas suitable include industrial sites, within playing fields and golf courses where pesticides have been applied to specific grass areas.
2. For residual herbicides, the target area could be resprayed as part of the same treatment operation but the operator must abide by the maximum dosage rate and not exceed it for that specific area as scorching and run-off can occur.
3. The use of suitable equipment designed to treat liquid waste containing pesticides can be used provided the treated effluent can be stored safely.

How to dispose of containers

(Adapted from Orange Code of Practice)

1. Empty containers should never be reused unless specifically designed for that use.
2. Containers, except the ones in paragraph (4) should always be cleaned thoroughly before disposal. They should be cleaned in accordance with the label instructions or by a minimum of triple rinsing. Ideally the cleaning should be carried out when a spray dilution is being prepared to reduce surplus waste.
3. The cleaned containers should be kept in a secure, dry compound that is preferably not a pesticide store.
4. Pesticides can produce hazardous gases when they are in contact with moisture. Empty containers, in which hydrogen cyanide gassing powders, aluminium, magnesium or zinc phosphides have been kept, should not be rinsed or cleaned. They should be filled with dry earth, sand or inert material. The containers that have been filled with inert material should not be kept in a building.

How to dispose of solid contaminated waste

The solid waste arising from the clean up of spillages, including loose pesticides, heavily contaminated equipment and protective clothing should be disposed of through an authorised/licensed specialist disposal contractor.

SECTION 9

Record Keeping

Records that meet national regulations should be kept of all applications, storage and disposal of pesticides. The records should be updated regularly and be easy to complete and interpret. It may be a legal requirement to keep records and they may also be used as a reference in the event of an accidental contamination of people, land and water (see appendix 3).

Maintenance and availability of records

All records should be kept up to date and available for the period specified under national legislation and for the inspection by the appropriate agencies responsible for regulation and enforcement (See appendix 3). It is important that should any person have been affected by a pesticide that they give all the accurate information to the appropriate person as soon possible. The details should include the full name of the product, including prefixes or suffixes and batch numbers and any other relevant information.

For the records that have to be kept over a certain period of time, employers should make suitable arrangements for the safekeeping and ready access to the information particularly when changes in management, property, and ownership could occur.

Application records

It is advised that all local authorities should provide information to the public on the pesticides used in places with public access e.g. parks, highway verges and public open spaces etc. Calibration records should also be kept for monitoring.

SECTION 10

How to Prepare a Contract

A local authority considering contracting out pesticide application work has a duty to comply with and make sure contracting parties are aware of relevant national legislation. The local authority should be aware of any potential impact to the environment and the public when considering pesticide application. It is essential that the local authority carefully consider the contract preparation and management of the contract to cover the following areas:

Develop a policy

Before a local authority prepares a contract they should consult their policy document, which sets out their attitudes towards the use of pesticides on amenity areas. This should show any alternative methods of control that have been examined and that environmental and public considerations have been taken into account. The local authority should state in the contract that the clients should use the most appropriate, least harmful and minimum level of pesticide possible. Also there should be a clear understanding of the cause and effect of the problem to be treated and the objectives to be achieved by the contract.

Legal responsibility

The local authority should have a good knowledge and understanding of the relevant legislation and regulation relating to the supply, storage and use of pesticides and state in the contract that the successful contracting party should also have a good knowledge of relevant regulations. There is a responsibility and duty on the contracting party to ensure that they and their employees comply with such legislation.

Employees

The local authority should have sufficiently trained and qualified staff/advisors to undertake the preparation of tender documents and monitoring of the contract. Details of specific items i.e. type of pesticide, timing, dose rate should only be incorporated into the specification by clients with staff who have the relevant expertise and competence.

Control required

The local authority should state to the contracting client the standard of control required, methods to be used and what product can and can NOT be used. A 100% control may not be necessary but the local authority should agree on an achievable level of control taking account of any limitations, use of technique, legislation and environmental requirements. In particular the performance standard should recognise the performance criteria described by

the product label. In all circumstances the performance standard required must be realistic and as environmentally friendly as possible.

Area information

The local authority should make sure that the contracting party has a clear definition of the areas to be treated including any relevant measurements, maps and plans. The maps should clearly show areas of risk e.g. water bodies, nature reserves, schools, hospitals, residential areas etc.

Profile on contractors

The local authority should prepare a profile covering quality, capability and skills required and undertake an assessment of possible contractors with the potential to meet the conditions of the tender. This assessment must include information on the contractor's experience and competence in carrying out similar work and the number of qualified employees that the contractor can make available. The assessment should also include the application methods and assess which contractors have the best environmental policies.

Contract monitoring

The local authority should have in place a programme for monitoring the contract work to ensure that the tender conditions, specifications, performance and standards of control are met and that appropriate records are maintained and submitted. Persons undertaking the monitoring should be suitably trained and competent.

Review

An annual review of all aspects of the contract should be undertaken to ensure compliance with any changes in policy, legislation, controls or any other factor likely to affect its performance. The contract should include a break clause to allow any changes to be reflected in the contract if the policy or legislation changes.

SECTION 11

Alternatives to Pesticides

The aim of this good practice guide is to show local authorities the best possible methods of reducing pesticide usage whilst maintaining a reasonable level of weed control.

(a) Aquacide™

One alternative to chemical use in eradicating weeds is an Aquacide™, which is an environmental weed control system developed in Canada. The machine heats water up to 280° F (138° C) under a low pressure. The extreme heat of the water when in contact with the weed breaks down the molecular structure of the plant immediately.

Aquacide™ comes in several different models from hand-held models to larger systems that can be trailed behind tractors for agricultural use.

Aquacide™ can be used in several different situations: -

- Parks
- Line marking for playing fields
- Golf courses
- Playgrounds
- Public areas
- Roadways, motorways and pavements
- Shrub beds and trees

The benefits of using Aquacide™ are: -

- Uses only water to kill vegetation
- Environmentally friendly
- No harmful drift
- Instant weed killer
- Easy to operate
- No protective clothing needed
- No licensing or certificates needed



© Aquacide™, E.C.O Systems INC.



© Aquacide™, E.C.O Systems INC

(Adapted from Aquacide™ Leaflet)

(b) Steel Brushing and Acetic Acid

Other alternative methods, which are being used in some countries throughout Europe, are mechanically operated metal brushing machines. The steel brushes rotate and sweep away the weeds. Dilute acetic acid has been used as a herbicide in trials in Göteborg, Sweden.

During a trial period in June 2001 the Göteborg Traffic and Planning Board investigated combinations of the two methods above. They selected three areas, similar in size and vegetation and split the areas in two. In June a contracting firm mechanically brushed the areas and sprayed each divided area with two different dilute concentrations of acetic acid. The three separate areas were sprayed directly after and on a time scale thereafter, see Appendix (1). The results illustrated that using steel brushes and spraying either concentrations of acetic acid directly after and up to four weeks was the most effective method.

However the steel-brushing machine is not suitable for manoeuvring around bollard's and signs. The solution to this problem is to spray between 6-8 times a year with dilute acetic acid and in extreme cases with traditional herbicides.



© City of Göteborg
(Mechanically operated brushing machine)

The before and after treatment pictures of one of the areas selected.



© City of Göteborg
(One week prior to treatment)



© City of Göteborg
(Post brushing and spraying)

The effects of acetic acid are explained in Appendix (2). Acetic acid is readily biodegradable and poses no risk of bioaccumulation. However it presents some risk to the operator if safety precautions, clothing and equipment are not used correctly. Acetic acid is less harmful to the environment and public health than pesticides. Around 3-4 treatments per year would be a suitable alternative to traditional pesticide control.

(c) **Manual Alternatives**

An alternative to traditional weed killers is hand hoeing. This is very effective in small areas and poses no risk to the environment or operator. However there are additional financial implications in terms of higher labour costs.

Another possible alternative is mulching. This can involve either compost, plastic or bark extracts, which would be used over exposed soil to prevent either soil erosion or penetrating weeds. This stops weeds germinating and deprives them of light and nutrients.

Using bark from old Christmas trees has been a successful method of waste disposal and recycling trees and is a good cover for the soil. The bark can be used around plant beds and in public parks and playgrounds.

Mulchmats, which are plastic sheets, can be used in paths, plant beds, parks, playgrounds, and sports grounds. The plastic is laid underneath a path and prohibits penetration from potential weeds. Mulchmats must be well anchored down to stop them from lifting.

Propane flame guns are another viable alternative. The weed must be visible prior to application for the flame to be able to rupture the cells causing the weed to die. The treatment must be carried out regularly throughout the year. Appendix (4) illustrates the advantages and disadvantages of some of the alternatives mentioned above and show potential costs/annum/m².

(d) Chemical Control

If no other non-chemical method is feasible then local authorities should consider using less harmful pesticides. Hilite®, a non-irritant glyphosate is a versatile herbicide, which can be used on a range of amenity areas. It is rainfast in 30 minutes and is coloured to reduce the chance of contamination. Hilite® is an oil-based herbicide that helps the droplets stick to the whole leaf and can penetrate the waxy cuticle more effectively than water based herbicides (Nomix Chipman, 2002).

A hydraulic based nozzle with serrated edges allows the droplets to fall horizontally on to the weed reducing drift. Similar to Hilite®, Roundup Pro Biactive® and Glyphos Proactive® are versatile herbicides and are also classed as non-irritant glyphosate. These three herbicides would work best on broad-leaved weeds such as yarrow, dandelions and chickweed; some of the most common weeds local authorities have to deal with.

If chemical control is necessary, local authorities should identify those manufacturers that use oil based herbicides, which can be used with a serrated hydraulic nozzle and that are also classed as a non-irritant to reduce the pollution factor as much as possible. Also the local authority should consider what type of herbicide to use in each individual case. A non-residual herbicide has less prolonged effects than a residual herbicide.

Care must be taken when selecting specific chemical treatments to assess the effect of spreading agents as well as the active ingredient.

SECTION 12

Conclusions

This Manual aimed to identify the main issues that local authorities should consider in ultimately reducing pesticide usage and identifying other non-chemical alternatives.

As part of this research a total of 127 local authorities in the UK were sent a questionnaire regarding pesticide use. Therefore the research does not reflect current practices in other countries. The UK responses indicated that few UK local authorities had a pesticide policy.

The project identified that there are several EU Directives that cover agricultural pesticides but only a few cover amenity pesticides. The Plant Protection Products Directive 91/414/EC covers pesticide authorisations and the EU Drinking Water Directive sets stringent limits of pesticide levels in drinking water. Storage and disposal of amenity pesticides are generally covered under EU Directives, which deal with agricultural pesticides indicating the need for more clarification and legislation on amenity pesticides.

Main Conclusions: -

(a) The results from the 16 questionnaires returned indicated that only four local authorities had a pesticide policy and very few local authorities: -

- Have completed an audit on areas being treated
- Have completed a pesticide risk assessment on current policies and pesticide operation procedures
- Believe that pesticides are the cheapest option, however the majority do not include disposal, storage and training costs in their evaluations
- Use manufactures/suppliers that include collection of waste pesticide and containers in the purchasing policy

(b) Many local authorities: -

- Have not investigated non-chemical options in weed control
- Do not include specifications in their contracts to outside contractors that they recommend the use of alternatives to pesticides when possible
- Do not use alternative methods due to the increased labour costs and budget restraints

(c) Legislation on amenity pesticides is spread over several EU Directives and needs to be improved.

- There are viable, environmentally friendly, technically feasible alternatives to pesticides available

SECTION 13

Recommendations

- 1. Local authorities should: -**
 - (a) Develop a pesticide policy in order to reduce exposure and reliance on pesticides**
 - (b) Complete an audit to determine current practices and locations of chemically treated areas under their control**
 - (c) Complete a pesticide risk assessment on current pesticide operations and procedures**
 - (d) Look at potential environmental problems arising from the use of pesticides on treated areas**
 - (e) Review current purchasing policies**
 - (f) Undertake research into possible non-chemical alternatives**
 - (g) Check current legislation on training and make sure all staff and contracting bodies are fully trained and competent**
 - (h) When drafting tenders develop a policy that all contracting parties must use alternatives to chemicals where possible**
 - (i) Develop ways to reduce waste pesticide and washings from cleaning containers**
 - (j) Review possible improvements to storage facilities and cleaning areas to reduce contamination**
 - (k) When pesticides are the only option consider the least harmful pesticide to the environment**
 - (l) Lobby for more clarification and improvement on amenity pesticide legislation**
- 2. Governments should provide funding and support to local authorities to help them move from the use of pesticides alternative methods.**
 - (a) There should be more research into the effects of amenity pesticides on the environment**

SECTION 14

Appendix (1)

Pilot Study – City of Göteborg 2001

A pilot study on weed control on hard surfaces and the comparison between different methods was carried out in the City of Göteborg during the summer months of 2001.

The two alternatives that were used in the trial were the mechanical steel-brushing machine and dilute acetic acid. There were three equally sized road areas selected for the trial comparing different methods of weed control by brushing and spraying with acetic acid. The steel brushes were carried by tractor and a backpack container applied the acetic acid with dose rate at 0.2-0.3l/m². The test areas were 100-200m² in size and divided in two equal parts with similar vegetation and they were treated as follows: -

Area 1

Treated on the 14th June 2001 by the steel brushes and sprayed with acetic acid on the same day. Part 1 was sprayed with 12% dilute solution and Part 2 was sprayed with 24% dilute solution.

Area 2

Treated on the 14th June 2001 by the steel brushes and sprayed by acetic acid two weeks later. Part 1 was sprayed with 12% dilute solution and Part 2 was sprayed with 24% dilute solution.

Area 3

Treated on the 14th June 2001 by the steel brushes and sprayed by acetic acid four weeks later. Part 1 was sprayed with 12% dilute solution and Part 2 was sprayed with 24% dilute solution. However there was an error and the original Area selected was not brushed or sprayed. Another area equal in size to Area 3 was selected, however the vegetation deviated from the other areas and may have affected the results.

Comparable hard surfaces in the surrounding area of the test sites were used as reference areas. They were brushed on the 7th July 2001. Each area was photographed during June and July and once every three weeks, thereafter until September. The results were estimated by percentage of dead weeds.

The results illustrated that there was no significant difference between concentrations on acetic acid respectively. Effects could be observed up to two months after application. Brushing followed by acetic acid sprayed on the same day or two weeks after was very effective. The percentage of success was between 90-100%. With four weeks between brushing and application of acetic acid the results were 50-90%.

The brushing of reference areas on the 7th July was not as effective as in June. The trial showed that the earlier brushing seemed to have more durable effects. The best short-term effects were on the areas where spraying was completed directly after brushing. The best long-term effects were brushing an area and spraying 2-4 weeks after. Also there were some older more robust plants with established root systems that would require additional treatments.

Appendix (2)

How Dangerous is Acetic Acid?

Ecotoxicology

Acetic acid is a weak acid and the toxicity is generally low. Acetic acid is readily biodegradable (Verschueren, K 1983) (Nordic Ecolabelling 2002), i.e. it is rapidly degraded by micro-organisms (bacteria) into carbon dioxide and water and there is no risk of bioaccumulation. It would require an accidental release of concentrated acetic acid into a watercourse to have any effect on aquatic organisms.

Human health

Most acidic cleaning agents will cause burns to the skin, the eyes and mucous membranes in concentrated form. In diluted solutions, these agents will be a strong irritant. The skin will generally tolerate acids better than bases. When burns occur on the skin, pain is immediately sensed, and the skin becomes red and swollen. Long-term and repeated inhalation of aerosolised acidic cleaning agents may damage the lungs and give rise to chronic bronchitis (Swedish National Chemical Inspectorate).

Acetic acid is included in Annex 1 of the list of dangerous substances of Council Directive 67/548/EEC and classified as Corrosive (C) with the risk phrase R35 (Causes severe burns). However as a weed control agent acetic acid is generally used in concentrations below 25%. The percentages and labelling on different concentrations of acetic acid are as follows:

- conc \geq 90%: Cx; R35 means if the acetic acid concentration exceeds 90% it must be labelled Corrosive (C) and have the risk phrase "Causes severe burns".
- $25\% \leq$ conc < 90%: C; R34 means if the acetic acid concentrations is > 25% and < 90% it must be labelled (C) and have "Causes burns".
- $10\% \leq$ conc < 25%: Xi; R36/38 means if the concentrations is less than 10% the acetic acid must be labelled Irritating and the phrase "Irritating to the eyes", (Swedish National Chemical Inspectorate).

The 12-24 percent acetic acid solution that is used as a herbicide is classified as irritating with the following risk and safety advice phrases: (Swedish National Chemicals Inspectorate).

- Irritating to eyes and skin
- Keep out of the reach of children
- Wear suitable gloves
- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice immediately and show the container or label
- Do not breathe gas/fumes/vapour/spray (appropriate wording to be specified by the person placing the product on the market)

There are airborne exposure limits. In Sweden they are 5 ppm for a whole working day exposure and 10 ppm for 15 minutes exposure (Hansson D *et al.*, 1994).

Conclusion

There might be some occupational problems caused by accidental spillage of concentrated acetic acid and evaporated fumes, however these problems can be avoided by using suitable protective equipment and training (Hansson, D *et al.*, 1994).

Appendix (3)

Record Keeping

| Type of Record | Time Kept* (Years) In UK | Reasons for Records |
|---|--------------------------------|--|
| Pesticide treatments | 3 | Ensure compliance with the conditions of approval and any requests for information from public and comply with the requirements of national legislation. |
| Assessment records | Until revised | A suitable and sufficient assessment of the risk to health should be undertaken. An environmental assessment should be carried out to ensure that obligations under national regulation to protect the environment are being kept. |
| Maintenance, test control measures | 5 | Employers may be required to maintain, examine and test engineering controls and respiratory equipment. |
| Monitoring e.g. air sampling | 5 | Employers may be required to ensure adequate control of hazardous substances is maintained. |
| Monitoring where records show personal exposure of identifiable employees | 40 | Employers may be required to ensure adequate control of hazardous substances is maintained. |
| Health surveillance | 40 | Employers may be required to carry out health surveillance of their employees. |

* National Regulation may vary from country to country

Appendix (4)**Alternatives and the Costs**

| Method | Disadvantages | Advantages | Frequency/ annum | Costs/annum/ m² UK Prices |
|---|--|---|--|--|
| Planting Areas Hand weeding | Labour intensive, still produces competition, root disturbance potential. | Non-Chemical | 7 | £0.98 |
| Organic mulches | Weed can colonise surface, regular sweeping from adjacent hard surfaces. | Non-chemical, visually good, moisture retention as well as a good weed control if 75mm and clean ground. | Initial application Annual top up | Mushroom compost £1.40 Medium grade bark £2.20 Mushroom compost £0.50 Medium grade bark £0.70 |
| Plastic mulches | Prone to lifting if not well anchored down, visually unattractive. | Non-chemical, moisture retention good, weed control good, strip planted black 125mm polythene has greatest potential. | Initial laying Biannual check | Polythene £0.30-£0.40 Mulchmats £0.40 Checks £0.04 |
| Herbicide regime | Chemical | Cost effective, balanced programme will produce clean ground. | 2 translocated 1 residual | £0.11 |
| Cutting grass/weeds | Labour intensive, increases competition for water and nutrients, only feasible for structure planting, strimming around tree will damage bark. | Non-chemical, useful on sloping ground to stop erosion, especially if bases are sprayed out. | 3 cuts 6 cuts | £0.06 £0.12 |

(Adapted from PAN News 1993)

Appendix (4)

| Method | Disadvantages | Advantages | Frequency/ annum | Costs/annum/ m ² UK Prices (1993) |
|--------------------------------------|---|--|---|--|
| Hard Surfaces Hand weeding | Labour intensive, weed visible prior to weeding, feasible only on gravel surfaces. | Non-chemical | 6 | £0.66 |
| Mechanical brushing | Needed regularly for pavior and flags to dislodge germination. | Non-chemical, no surface damage if plastic/natural brushes are used. | 32(weekly summer and monthly winter) | Sit on £0.13 Pedestrian £0.29 |
| Propane flame gun | Weed must be visible, labour intensive, energy consumption, air pollution. | Non-chemical, no surface damage if used 10cm away. | 6 | Pavior £0.30 Flags £0.18 |
| Herbicide | Serious limitations, run off in certain sites. | Cost effective, will stop almost any weed from germinating. | 1 total herbicide or 2-3 translocated | £0.02 £0.04-£0.06 |
| Acetic Acid | Corrosive chemical, risk to operator, risk to environment in concentrated form. | Effective in killing weeds, is biodegradable and does not bioaccumulate. | 3 – 4 treatments per year combines with mechanical brushing | £0.10 -£0.13 |
| Aquacide | Weed must be visible, higher labour costs. | Effective in killing weeds, Non chemical, easily used, no surface damage. | 1-2 treatments per year depending on surface area | N/A |

* Note some alternatives may involve noise, exhaust gas, fossil fuel consumption and be physically demanding on operative.

SECTION 15

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Background

The Project

The project was undertaken in Shetland by Miss Tracey-Anne Robertson as part of the Shetland Islands Council Graduate Placement Scheme in 2001. The checklist and manual are available on the KIMO website at <http://www.zetnet.co.uk/coms/kimo>.

KOMMUNENES INTERNASJONALE MILJØORGANISASJON (KIMO) LOCAL AUTHORITIES INTERNATIONAL ENVIRONMENTAL ORGANISATION

KIMO is an international association of Local Authorities and associated organisations, which was formally founded in Esbjerg, Denmark, in August 1990 to work towards cleaning up pollution in the North Sea. The idea for the organisation originally came from Vågsøy Kommune in Norway. Vågsøy had been concerned since 1985 about the proposals for further nuclear fuel reprocessing at Dounreay, which they saw as a threat to their fishing industry. The widespread seal deaths in the North Sea in 1988 and the spread of toxic algae bloom up the west coast of Norway in the same year brought home to them that the threats to marine life in the North Sea extended well beyond radioactive discharges. They also realised that any action taken to clean up the North Sea could only be effective if it was co-ordinated on an international basis and decided to contact some other local authorities to form a nucleus of an international group.

The other founder members - Shetland Islands Council, Grampian Regional Council and Esbjerg City Council - were selected at that time on the basis that they shared with Vågsøy a common interest in protecting their fishing industries. From this modest localised start KIMO has grown in size and in terms of its aims and objectives. It now has over 110 members in the UK, Norway, Sweden, Denmark, Faeroe Islands, The Netherlands, Belgium and The Republic of Ireland with associate members in Germany and the Isle of Man representing over 6 million people. Its remit now also includes the Irish Sea and the North East Atlantic.

“KIMO’s primary objective is the cleaning up of the existing pollution in Northern Seas and coastal waters, of preventing future pollution and working to preserve and enhance them and to leave them in a fit and healthy state for the well- being of future generations”

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