ODOUR NUISANCE CONTROL IN NEW ZEALAND

Office of the
PARLIAMENTARY COMMISSIONER FOR THE ENVIRONMENT
Te Kaitiaki Taiao a Te Whare Pāremata

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PREFACE

Although bad smells are often treated as a joke by many individuals, unpleasant odours can be nauseating, pervasive in that they persist in clothing and household furnishings, and are particularly intractable when controls are sought. I consider that the quality of life for several residential communities in New Zealand has been significantly impaired by such odours. In some cases this has persisted for as long as sixteen years.

The reasons for these intolerable situations are found in the inability of the government system to either control or provide relief. This report expands on advice already given to the Select Committee considering the Resource Management Bill and advice to the Selwyn District Council considering a planning application for an industry that has had a long history of odour problems. The findings of this investigation are relevant to every Regional and District Council.

Deficiencies in the legislation have led to less than adequate performance by public authorities trying to protect their ratepayers' environment. Odour is also a subject where scientific understanding is far from complete. Methods for assessing, if not measuring, odours and odour nuisance have still to be refined.

Air is a public good and should be managed in a similar fashion to other public goods, such as water. Therefore as local government implements its responsibilities under the Resource Management Act it will become even more necessary to refine techniques so that standards for odour and emission limits can be set.

For activities where odour cannot yet be effectively controlled the only proven way of protecting the public from unacceptable odour nuisance is to ensure there is an adequate separation distance between the activity causing the smell and residential areas. The long intolerable history of the Prebbleton area should not be allowed to continue or be repeated in other communities.

As with many environmental management problems, good practice over and above what the legislation provides, is often the key to successful solutions. With goodwill on the part of all parties it should be possible to ensure pollution-free air for all.

Helen R. Hughes

Helen R Hughes
Parliamentary Commissioner for the Environment

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GLOSSARY

Odour threshold:	that concentration of a substance or mixture of substances which is distinguished from odour free air by half of a group of observers (panel). By definition, the odour threshold has an odour concentration of 1 odour unit/m^3
Dynamic dilution testing:	A sensory analysis method of assessing odour threshold by use of a dilution device which presents odour to a panel of observers under reproducible conditions
aerobic:	in the presence of oxygen
anaerobic:	in the absence of oxygen
RAPCO:	Regional Air Pollution Control Officer of the Air Pollution Control Unit, Department of Health
BPM:	best practicable means
stickwater:	highly odoriferous and very concentrated liquid effluent from part of the rendering process
air quality standard:	in this report, refers to an ambient air standard to be aimed for
emission limit:	in this report, refers to a specific limit on a contaminant which is applied at the outlet and can be specified as a condition on a resource consent
tunnel composting:	a form of environmentally controlled composting which takes materials from the preassembly mixer and continues the composting process in completely enclosed and controlled surroundings
windrows:	row or line of formed compost to improve aeration

1.0 INTRODUCTION

1.1 Background to investigation

Odour nuisance complaints comprise a large proportion of public complaints received by air pollution control officers both in New Zealand and overseas.[1] From time to time since 1987 the Parliamentary Commissioner for the Environment has been made aware of odour nuisance complaints by members of the public, but in 1990 there was a significant increase in the number received.

The Commissioner views public complaints as one potential indicator of flaws in the environmental management system, and decided to carry out a generic investigation of odour nuisance control.

As an environmental issue, odour nuisance is very human-oriented, causing social impacts. Intensely unpleasant odours from adjacent land uses over which there is no control are a serious issue for the people whose lives are disrupted.

The six principal complaints concerning odour nuisance which were received by the Commissioner in 1990 are all highlighted in the case studies section of this report. Only two of the six are addressed in detail. These are Meadow Mushrooms in Prebbleton, a large-scale mushroom farming operation, and the Alliance Group Kaiapoi Plant, a meatworks in Kaiapoi.

A particular focus of the investigation was to advise on any changes needed in the legislative structure, with the timing of this advice such that necessary changes could be made to the Resource Management Bill. Such advice was given to the Select Committee in June 1991, but for the most part was not accepted and instead referred back to officials for consideration in drafting transitional regulations or future amendments to the Act. The Commissioner will monitor the progress of these changes.

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1 K.Rolfe, D. Pullen, R. Pilgrim, pers. comm.; Van Harreveld, 1989.

1.2 Terms of reference

The purpose of this investigation is to determine whether legislative and administrative measures available for odour nuisance control in New Zealand:

(a) have been adequately exercised by authorities in the case of complaints of odour nuisance received by the Commissioner, and;
(b) are adequate to protect the quality of the environment;

and, if not, to provide advice on preventive measures or remedial action to Parliament and authorities as appropriate.

Terms of Reference

1. To identify existing and proposed legislation dealing with odour nuisance prevention and control, and cases relating to odour nuisance brought to the courts.

2. To investigate complaints of odour nuisance received by the Commissioner and other case studies as appropriate, with particular attention to factors contributing to ongoing problems, any difficulties experienced by public authorities in implementing the relevant statutes, and approaches which have successfully minimised or prevented odour-related conflicts.

3. To formulate appropriate preventive and/or remedial advice, if any.

Legal authority for the investigation is derived from sections 16(1)(a), 16(1)(b), and 16(1)(c) of the Environment Act 1986.

1.3 Defining odour nuisance

The human sense of smell is a very sensitive, real and physical reaction to the presence of odour molecules in the air. Some compounds can be detected by the nose at concentrations in the parts per trillion - below the accuracy level of many analytical instruments. The identity of some significant odorous air pollutants is given in Appendix I.

One characteristic of the sense of smell is that the physical ability of individuals to detect odour in the environment varies; factors such as age, sex and desensitivity of the smell receptors contribute to individual variation in odour perception.

A further characteristic that contributes to variation in the perception of 'odour nuisance', is the individual's reaction to the odour. State of health, culture, life style and degree of familiarity with the odour and the odour-forming process all contribute to the subjective assessment of odour as a "nuisance".

There are some odours, however, about which there will be little argument. Odours characteristic of rotting flesh or decomposing excrement would be described by few people as pleasant or acceptable in concentrated form in residential areas. These organic based odours are the kinds of odours at issue in the case studies.

Odour nuisance sufficient to disrupt a person's daily life will prompt complaint and expectation of public authority action. The strong smell of a piggery or fellmongery in one's living room has a serious adverse environmental impact on the person involved.

> *" The reality of living with this stench is as follows; firstly imagine the worst smell you have ever encountered, perhaps raw sewage or dog faeces or a rotting animal carcase, now imagine living with that smell for hours or even days on end. Imagine eating a meal, doing the gardening, entertaining guests, endeavouring to sleep, in fact any activity which takes place in your average household. It's an insidious thing which invades every part of your house and from which there is no escape other than to leave the area for a few hours respite."*[2]

A common response of public authorities is that odour cannot be easily measured, so nuisance is hard to 'prove'. While it is true that odour cannot be measured with relatively simple machines as noise can be, odour can be assessed with panels of people backed up by chemical analysis (*see section 3.2).* Public complaints are a simple and cheap assessment of odour nuisance. 'Acceptable' levels for noise in the community have been arrived at based on subjective human response, and so too could the acceptable level for odour.

It is also a common theme that people's tolerance of odours has changed, and their expectations of environmental quality have increased. This may indeed be generally true, but does not mean that community complaints about odour are not valid and actionable. It does mean that public authorities and industry will need to continue to reduce the level of contaminants released into the environment.

Despite these variables, in the cases studied, there was in general little disagreement between residents and public authorities that an odour nuisance exists. Where the disagreement arose was as to whether the nuisance was *legally actionable.* The public authorities tend to weigh up the concerns of residents against other demands on time and resources and real or perceived obligations to local industry.

Certain industries are inherently odorous, and are important components of our local and national economy. Such industries need to go into 'someone's backyard', but statutory controls exist which can be used to keep such industries away from residential areas, improve plant operation and control equipment so as to minimise odour emission, and ensure the scale of operation is such that the environment can assimilate and dilute the odorous compounds released.

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2 Letter of 26 February 1991 from C R Paterson resident of Kaiapoi to D Pullen Department of Health.

1.4 Legal authorities related to odour nuisance

At the time of writing the Clean Air Act 1972, the Town and Country Planning Act 1977 and some parts of the Health Act 1956 comprise the legislation which may be used by public authorities to control odour nuisance, and are relevant to the case studies in this investigation. The first two statutes will be replaced by the Resource Management Act 1991 when it comes into force on 1 October 1991. There are also remedies in common law for nuisance, which have not been exercised in these cases, and are not removed by passage of the Act.

Clean Air Act 1972

The Clean Air Act was enacted to promote "the conservation of the air and the abatement of the pollution thereof". Odour is included in the definition of 'air pollutant' in section 2(1). Specified air pollulants, including odorous compounds, are listed in the First Schedule.

The Act has a duty on occupiers of premises to use the 'best practicable means' to minimise emissions of air pollutants and to render them harmless and inoffensive (s.7), and operates through the setting of standards, the ability to create clean air zones, and the licensing of certain processes.

The Act specifies, in the Second Schedule, processes for which a licence is required. Part A processes require a licence from the Department of Health, part B (and C processes subject to bylaws) require a licence from the local authority. If a company with a scheduled process intends to change its operations, it needs to obtain a s.31 approval before start of construction. It is an offence to fail to obtain a licence for the scheduled processes or to not comply with conditions set.

Conditions may be imposed on the licence for the purposes of the Clean Air Act (and the Health Act 1956), for example, specifying maximum concentrations for the emission of pollutants or requiring the licensee to install and operate control equipment. Conditions are in addition to any imposed under the Town and Country Planning Act.

The licensing body may refuse to issue a licence if town planning provisions have not been met or endangerment of public health is likely, and may add to or otherwise vary the conditions of a licence during its currency. There is a right of appeal to the Courts on licence conditions.

The Act is administered by the Department of Health (DOH) which employs specialised Regional Air Pollution Control Officers. The local authority in administering part B or C can employ officers to undertake these duties or pay a contribution to the consolidated fund, in which case the duties pass to the DOH officers.

Enforcement of the provisions of this Act includes action under s.7 for a failure to maintain control equipment in a proper and efficient manner. The local authority may

initiate procedures both for premises which are in its area and in another jurisdiction but causing problems in its area.
Offences are heard in the District Court and the Act provides for fines for the initial offence and any ongoing offence. If the holder of a licence is convicted under the Act, the licence can also be cancelled (s.53).

The Town and Country Planning Act 1977

The Act allows for the implementation and administration of planning schemes to recognise and provide for both matters of national importance and the wise use and management of resources while promoting and safeguarding the general welfare of the people and the amenities of the area.

Section 36 of the Act requires that district schemes make provision for matters referred to in the Second Schedule and these include the avoidance or reduction of nuisance caused by the emission of odour. There is also a general duty under s.77 to keep objectionable elements of certain uses of land to a minimum and odour is included as an objectionable element.

Operation of these duties is primarily through the use of district and other planning schemes. District schemes are to provide for such measures as controls, prohibitions and incentives relating to the use of any land or buildings, so as to achieve the purposes and objectives of the district scheme and the Act.

District schemes may distinguish between classes of use or development so as to enable appropriate controls to be applied or to allow separation of inappropriate activities into zones. The Act envisages that schemes will identify those activities which involve the emission of odours as belonging to a class of uses subject to appropriate control or conditions. Existing uses, either prior to the establishment of a scheme or following a scheme review, are allowed to continue even if they fall outside the now permitted use in a zone.

The local authority administers the Act and the scheme for the area under its jurisdiction. There is a requirement for public notification in establishing and reviewing schemes, and for any consents that are required for uses outside the predominant use in a zone.

Enforcement is by prosecution by the local authority in the District Court for offences committed under the Act. There is the power to obtain injunctions from this court for continuing offences. Part VIII of the Act provides a right of appeal of decisions to the Planning Tribunal.

Health Act 1956

Public health is the focus of the Health Act and therefore nuisances are defined in terms of whether or not the undertaking is "offensive or likely to be injurious to health", rather than in terms of land use. There are general powers and duties given to local authorities to allow them to find out if a nuisance exists in their area, and take steps to secure the

abatement of the nuisance. For the purpose of odour nuisance control, a nuisance is defined in s.29 to include: "(1) Where any trade, business, manufacture, or other undertaking is so carried on as to be unnecessarily offensive or likely to be injurious to health."

The Act operates through the ability to take action under s.30 which states that it is an offence to cause or continue to create a "nuisance". There is also a permitting procedure (s.54) for offensive trades as defined in the Third Schedule and the ability to set conditions on these trades.

Action under the general powers of this Act is restricted to the local authority within whose district the nuisance occurs. It excludes the ability of adjoining local authorities to take prosecutions where nuisances originate in adjoining jurisdictions.

Enforcement is by taking cases to the District Court which can require abatement of the nuisance and prohibit a recurrence. Offences under offensive trades provisions can incur a fine.

Common Law Provision

Odours have long been accepted as giving rise to the possibility of a common law action in nuisance.

The common law recognises private nuisance, and public nuisance.

Private nuisance protects the occupier of land from unreasonable interference with the use and enjoyment of his or her land. The interference complained of must be material, but this is not confined to financial loss, or damage to health. Interference which causes discomfort and inconvenience is actionable.

Public nuisance provides a remedy against unreasonable interference with some public right, such as use of the highway. Action in public nuisance may be brought to protect the public's enjoyment of the environment. An individual, however, may only bring a public nuisance action where that person is affected to a degree greater than the general public.

The second way that a public nuisance action may be brought is by the Attorney-General, either in his or her own name, or by relator action on behalf of the local authority.

2.0 CASE STUDIES

2.1 Meadow Mushrooms, Prebbleton

2.1.1 The problem

Meadow Mushroom's operations centre on 9 ha in Prebbleton where approximately 35 tonnes of mushrooms are produced each week, and enough compost to supply both this site and an equivalent production site in Wilmers Road.

Residents surrounding the Meadow Mushrooms site have formally complained of odours from the site for over 15 years (*see Table 2.1*). The principal source of objectionable odour is the Company's on-site composting process.[1] This process produces a growing medium for intensive farming of mushrooms in enclosed controlled environment growing sheds.

The principal raw ingredients for the compost are animal manures (some 5,000 tonnes of chicken manure and 5,000 tonnes of stable manure per year) and straw (equivalent to some 350,000 small bales per year).[2] The most objectionable odours, principally from reduced sulphur compounds, are created when insufficient oxygen reaches the composting materials (anaerobic decomposition), but traditional or conventional aerobic composting in such high volumes in an intensive operation can also create objectionable odours.[3]

Objectionable odours from Meadow Mushrooms are commonly detected up to 1 km from the site, and can carry as far as 4-5 km.[4] There are some 600 residents in Prebbleton township and surrounding areas, all of whom can be affected by the odour depending on general climatic conditions (including wind) and the odours can persist for long periods up to several days at a time.[5] Local authority staff have estimated that 30 to 40% of the time when driving through Prebbleton, an objectionable odour is present.[6]

Judges who have presided over cases relating to Meadow Mushrooms have made unequivocal statements about the existence of odour nuisance. Judge Treadwell of the Town and Country Planning Appeal Board found in 1977 that "the residents are fully

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1 Residents have also complained over the years of other environmental impacts including possible health risk from methyl bromide gas used on the premises, factory effluent effects on the groundwater, and noise, but these are not addressed in this investigation.

2 R Young, pers comm.

3 When Meadow Mushrooms had a highly anaerobic composting process, the principal components of the odour were the reduced organic sulphides such as hydrogen sulphide and methyl mercaptan. When the composting method was improved, the odour changed, and now is estimated to contain a full range of organic sulphides, possibly some amines as well (D Pullen, pers comm).

4 D Pullen, pers comm.

5 Selwyn District Council 1990.

6 R Nixon, pers comm.

TABLE 2.1: SEQUENCE OF EVENTS: Mushroom Composting Case Study,Prebbleton

YEAR	COMPANY	TERRITORIAL AUTHORITY	DEPARTMENT OF HEALTH	COURTS	RESIDENTS	OTHER
1970-1973	Meadow Mushrooms (MM) establishes	Paparua County Council had no operative district scheme. Only holding permit required for MM.	1972 - Clean Air Act passed into law. No requirement for CAA licence for MM until change in Act 1983 to cover composting.		Residential area around MM site already established (village there since 1850s, subdivison in 1950-60s).	
1974	MM developed into 15 growing sheds plus ancillary buildings.	First district scheme operative. MM site zoned Rural - "farming of any kind" predominant use (August).				
1975					Concerns formally expressed to PCC about odours: advised no control through district scheme. Prebbleton Community Association founded (November).	
1976	Open Day for public (May). Asked PCC for dispensation from proposed scheme change to allow further expansion (November). Refusal to keep residents association informed re company plans (December).	Scheme change No. 4 notified - MM site to be rezoned Rural General - restrictions on factory farming on good farmland and/or by residential areas (March). Refused MM request for dispensation: advised specified departure application required (December).				
1977	Applies for specified departure to expand operations. Purchases adjacent 10 acre block, doubling size of landholdings in Prebbleton. Company announces it will appeal refusal of specified departure (June). Advertises application for water rights (October). Major fire in straw stacks (November).	Advice sought from DOH re: MM use of methyl bromide. Hearing on specified departure application. 164 objections received. Application rejected. Advises residents to engage legal counsel to carry their case against the MM appeal.	DOH represented in TCP Appeal Board hearing (September). Assists PCC with methyl bromide testing. Letter to residents seeking volunteers for tests on possible health problems from methyl bromide used by MM (December)	Appeal heard by TCP Appeal Board (J. Treadwell) (September). Appeal rejected (December). Findings re lack of action by authorities; poor attitude of company; MM had no water rights; residents "fully justified" in their complaints concerning smell and potential contamination of aquifier.	Prebbleton Action Group formed. Public meeting re MM (90 attended.) (March). 29 objections to Specified departure application (June). Concerns include smell, noise, dust, flies, visual pollution, water pollution. Mr A Hearn (later QC) engaged by residents for appeal. Petition presented to appeal hearing representing 126 households (510 residents) (September). Public meeting re: MM water rights (November).	

1978	Advertises amended application for specified departure (February). Re-advertises with corrections (May). Announces intention to appeal PCC refusal (July). Increased capacity of growing sheds from 320 to 400 trays/ week (August). Survey of residents re concerns about loss of amenities (November).	CAA licence granted for 2nd schedule Pt C process and renewed annually (June). Declines specified departure application: "measureable net gain" to residents insufficiently changed from first application (July). Analysis of objections to both specified departure applications shows 52 of the 154 properties immediately adjacent to MM formally filed objections (e.g. 30%).	Evidence for water rights hearing shows shallow groundwater has elevated nitrate levels: surface activity likely contribution (June). Residents tests "cleared" for safety. However, tests confirmed that symptoms of stress genuine in relation to possible exposure to methyl bromide.		PAG advises PCC of errors in second MM specified departure application and advises DOH re: concerns about validity of health tests re: methyl bromide. PAG complains of MM expansion (September).	Canterbury Regional Planning Authority decides that MM should not be allowed to expand in Springs Rd, Prebbleton (May). NCCB and RWB water rights hearing for MM. (35 objections.) Granted, with 28 conditions (July).
1979	Methyl bromide replaced by steam for sterilisation of trays prior to innoculation. Production increased from 400 to 600 trays/week by reducing length of growing cycle (September). Appeals TCP Appeal Board decision.	Permission granted for erection of new offices and canteen at MM, without requiring specified departure.		TCP Appeal Board hears MM appeal of second application. Appeal rejected (April-August).	PAG engages A. Hearn for second appeal by MM.	
1980		CAA license issued to MM re: methyl bromide, contains condition to adopt "best practicable means to control the emission of objectionable odours" (July).		Application for retrial and appeal heard by High Court (July and November). Judge adjourns to await information (December).	PAG engages A. Hearn to represent them again.	
1981	Applies for permission to erect staff dwelling and "storage sheds" on site.	Notified first review of district scheme - MM site would remain non-conforming use (August). Hearing on MM application to erect new buildings (November).		Judge hearing appeal transferred to Wellington - decision still pending (June).	Residents oppose MM application for building on site: concern that "storage sheds" may allow increase in production (November).	
1982	Submits development plan for Wilmers Road site: growing sheds, composting, fumigating etc (September).	Wilmers Road development allowed: zoned Rural 4 - use as of right with conditions. Consent granted for erection of dwelling on Prebbleton site.	Regulation under CAA"composting of organic waste" now covered. (Comes into effect 1/83.)	Re-hearing of Appeal (April). MM Appeal dismissed by High Court (July).	PAG organises public meeting and fundraiser for legal fees (February).	

YEAR	COMPANY	TERRITORIAL AUTHORITY	DEPARTMENT OF HEALTH	COURTS	RESIDENTS	OTHER
1983	Wilmers Road site developed - 12 sheds, 200 tray/week capacity. Dwelling constructed at Prebbleton site (February). Does not accept PCC opinion that existing use rights exceeded by making Wilmers Road compost at Prebbleton (March). Applies for CAA license (April). Spawned compost trays transported from Prebbleton to Wilmers Road site. Increase in total MM production from 600 to 800 trays/week (June). Advertises application to expand growing facilities at Prebbleton (composting there or off site). Refuses PCC request to cease composting expansion (June). New odour masking system based on deodorant sprays installed (August). Experiments in wetting and mixing methods undertaken. Appeal to High Court on CAA licence conditions (December).	Complaints about increased odour received by Council: passed on to DOH. Advise MM that creation of compost at Prebbleton for Wilmers Road site would exceed existing use rights at Prebbleton (March). Seeks declaratory judgement from Planning Tribunal on whether MM still within existing use rights and asks MM to cease production of compost for Wilmers Road at the Prebbleton site until results known (June). MM given 3 months to successfully test deodorant spray system (September).	Public complaints re MM received 10 per day (February). Odour Survey commenced - log sheets to Prebbleton residents to be continued one year. DOH staff working on survey then redeployed (April). CAA licence application for MM received via PCC. RAPCO seeks additional information from MM and PCC (May). DOH represented in TCP hearing. RAPCO warns MM about operation of unlicensed premises; advises will not issue licence until existing use rights legality known (June). RAPCO seeks legal advice on issuing licence when TCP issues unresolved. CAA licence issued to MM (November).	Award of $1,500 costs to residents. Hearing on declaratory judgement for PCC begun and adjourned until March 1984.	PAG expresses concern to PCC that composting expansion to serve Wilmers Road site will increase nuisance (February). Petition to PCC from 255 Prebbleton residents re concern over lack of action to control MM nuisances (March). Request to Minister of Health to redeploy 'sympathetic' DOH staff conducting odour survey (May). 30 plaintiffs file High Court writ seeking injunction against MM and damages for nuisance, loss of property value and other impacts (June). 21 more residents file in support (July). Case did not proceed. Public meeting - majority support for removal of composting and reduction of other nuisances (June).	Minister of Works objects to MM application to expand (July).
1984	CAA licence application lodged (January). Evidence presented to Planning Tribunal on experiments. Their consultant reported a change from 'general pervasive' to 'specific intermittent' odour (July). Change from 4 to 1 large pre-assembly stacks: 3 days rather than 2 weeks anaerobic (October). Experimentation using old stationary turner for wetting (November). Mobile stack mixer ordered to replace old stationary equipment (December).		'Pro forma' CAA licence renewed (original under appeal) (March). RAPCO evidence at PT hearing - 70% of confirmed cases odour from MM classed as objectionable. Intensity higher in 1983/84 than in 1977/78 (July).	Planning Tribunal hearing on declaration re existing use rights: company has not exceeded them significantly since 1978 (July).	Testimony from residents on odour nuisance increase (based on change in composting volume) inconclusive (witnesses called both pro and con) (July). PAG requests PCC to appeal Planning Tribunal findings (August).	

1985	CAA licence application lodged (February). Experiments to eliminate pre-assembly pile: new machinery built (March). Experiment failed, larger machines ordered (April). Advises PCC and DOH that have reverted to old system due to equipment failure and staff losses: odour problems temporary (June). New machine arrives (December).	Prosecutes MM for nuisance under s.29 of Heatlh Act. PCC Health Office sworn evidence: odours "very strong to appalling".	'Pro forma' CAA licence renewed - appeal not yet heard. Odour complaints from public drawn to the attention of MM (May). Tests of compost found significant portion of both pre-assembly and windrow stacks anaerobic (July).		Residents note that they are not called by PCC as witnesses in nuisance case.	Ombudsman begins investigation into MM complaint of unfair treatment by DOH (July).
1986	Elimination of anaerobic pre-assembly piles using new mixing machine (February). Appeal lodged against nuisance decision against them (July).	Prosecution for nuisance successful (July).	RAPCO seeks to prosecute MM under S.7 of Act but advised by head office not possible while licence subjudice.	Hearing for Health Act prosecution of nuisance: found against MM. Odours of June 1985 "highly offensive" (July). High Court hearing of Appeal (December).		
1987	CAA licence application lodged (May).		Residents' complaints confirmed by PCC and RAPCO staff. MM asked to exlain breach of S.7 CAA (May). 'Pro forma' licence renewed - appeal not yet heard (June). Clean Air Act amended to cover "production of compost from raw materials" (comes into effect 1/88).	High Court finds in favour of MM on appeal (nuisance not "unnecessarily" offensive) (January).		Ombudsman concludes investigation of MM complaint. Complaint not substantiated. (May).).
1988	CAA licence application lodged (March). CEC trials in Europe investigated. Air ventilation pipes installed under pre-assembly stacks (August).	PCC receiving 'particularly irate' complaints. Health Inspector seeks legal advice (July).	Negotiations begun with MM on new licence.			
1989	New CAA licence conditions and withdrawal of appeal agreed to (June). Overseas CEC trials monitored.	PCC approves re-zoning to allow more rural-residential lots adjacent to MM (October). PCC disbanded and Selwyn District Council formed (November). Review of district scheme (due 1989) put on hold pending Resource Management Bill.	RAPCO sends another copy of proposed licence conditons to MM after no reply (April and May). Further discussion and new CAA licence issued (June).			

YEAR	COMPANY	TERRITORIAL AUTHORITY	DEPARTMENT OF HEALTH	COURTS	RESIDENTS	OTHER
1990	CAA licence application lodged (February). Overseas CEC experiments investigated and local trials begun. New mixing machine introduced. Tour of factory offered to residents, discussion with PEA re nuisance (September). Owners in new subdivision advised by MM to discuss potential problems before moving in. Objection to change No. 5.	SDC participation in delegation to the Minister (Mayor, Prebbleton Cr., staff) (August). SDC seeks legal advice on legal remedies through common law (October). Change No. 5 to District Scheme advertised making factory farming a conditional use in all rural zones (November).	CAA licence re-issued (April). Delegation to Minister of Health: licence stated to be "unenforce-able as it stood". Need to ID odorous compounds and measure. Officials directed to report by end of August on progress. Difficulty encountered with sensitivity of machinery: approval for new machinery sought. Contract let to Lincoln Uni. to ground check dispersion modelling. Field testing for types of odorous compounds present. Forward new draft licence conditions to MM containing new objectionable odours clause (December).		Letter to Minister of Health re continuing nuisance from MM (May). Prebbleton Environment Assn formed to fight nuisance from MM (June). PEA member in delegation to Minister of Health (August). PEA conducts their own odour survey (Aug-Sept). PEA requests PCE to investigate (September). Public meeting to present survey to SDC (October).	PCE responds to residents' request indicating further enquiries to be undertaken in 1991 (October).
1991	Reply to draft CAA licence condition "totally untenable" (January). CEC trial continued. Report given to DOH on progress and staff sent overseas to update technology (March). Purchase of Italian tunnel technology (July). Building permit application and planning application (without prejudice) (August).	Planning hearing for Change No. 5 (January). Legal opinion on common law remedies received (March). Decision on action deferred until PCE investigation concluded (April). Building permit application refused (September).	Asked MM to detail work being undertaken to advance 'tunnel technology' (February). Still awaiting approval for more testing equipment (March). New equipment received and being adapted (May).		Support of Change No. 5. PEA organises public meeting to present community concerns to PCE (May).	PCE initiates generic odour control investigation (April). Recommends related Resource Management Bill changes to Select Committee (June).

Abbreviations used:

CAA - Clean Air Act
CEC - Controlled environment composting (='tunnel technology')
DOH - Department of Health
MM - Meadow Mushrooms
NCCB & RWB - North Canterbury Catchment and Regional Water Boards
PAG - Prebbleton Action Group
PEA - Prebbleton Environment Assn
PCA - Prebbleton Community Assn
PCC - Paparua County Council (replaced in 1989 by SDC)
PCE - Parliamentary Commissioner for the Environment
RAPCO - Regional Air Pollution Control Officer
SDC - Selwyn District Council
TCP - Town and Country Planning

justified in their complaints concerning smell".[7] Judge Hay, in deciding a nuisance prosecution taken against Meadow Mushrooms under the Health Act in 1986, described "evil smelling anaerobic vapours" and found "without any doubt at all" that the odour under prosecution was "highly offensive".[8]

More recently, residents and non-residents of Prebbleton alike have stated to the investigation team that the odour is still at times thoroughly obnoxious. Descriptions from the Prebbleton Environmental Association's 1990 survey of residents included terms ranging from 'disgusting' to 'putrid' and 'sickening'. Public authority staff have confirmed it as 'pretty horrendous' and 'quite nauseating'.[9]

The manager of Meadow Mushrooms has recently stated that "there is no argument that at times we create a bad smell" and "clearly the manufacture of mushroom compost can at times create an odour nuisance".[10]

The existence of strong unpleasant odours in the residential environment forces people to curtail their normal activities. The fact that the worst odours are intermittent and unpredictable means that residents have to be prepared at any time to respond to them, and the impact of the odour therefore extends far beyond the actual time it is present around their home. Residents of Prebbleton report the odour pervading houses, curtains and clothing, the need to restrict outdoor activities and keep doors and windows closed, a reduction in the number of friends and family willing to visit their homes, the odour waking them up at night, and the need at times to stay in a motel to get a good odour-free night's sleep. Local businesses report the rapid retreat of passers-through who stopped to visit the shops or pub and encountered odours on a bad day.[11]

Residents believe that property values have suffered as a result of odour nuisance. The investigation team's enquiries suggest that although substantial differences between attributes of comparable communities make statistical 'proof' difficult, valuers predict that should odour nuisance be successfully controlled in Prebbleton, house prices there would rise noticeably.[12]

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7 No. 2 Town and Country Planning Appeal Board, Meadow Mushrooms v Paparua County Council, no. 385/77, Oct. 1977, p. A5134.

8 Christchurch District Court, Paparua County Council v Meadow Mushrooms, 15 July 1986, CRN Nos. 5009030192-3. The overturning of Judge Hay's decision by the High Court did not refute his finding of offensiveness, but determined that the process causing it was 'necessary' (cf 'unnecessarily offensive' in s.29(1) of the Health Act).

9 R Nixon, A Dunlop, pers comm; Selwyn District Council 1990.

10 R Young, pers comm 17/4/91 and letter dated 22/5/91.

11 T Gimson, pers comm; letter dated 30 January 1991 from Fright Aubrey Registered Valuers to Meadow Mushrooms; I Bunt, A Dixon, T Naish, pers comm.

12 T Gimson, pers comm; letter of 30 January 1991 from Fright Aubrey Registered Valuers to Meadow Mushrooms; I Bunt, A Dixon, T Naish, pers comm.

2.1.2 Local Authority response

Meadow Mushrooms was established under the jurisdiction of the Paparua Country Council in the early 1970s. This Council was replaced by the Selwyn District Council in 1989. The principle actions of the local authority in relation to Meadow Mushrooms are summarised in the second column in Table 2.1.

The majority of Prebbleton homes were already established at the time Meadow Mushrooms was set up,[13] so that the proposal in 1970 was to establish factory farming adjacent to houses. Although there were some problems with existing mushroom farms in the County,[14] the Town and Country Planning Appeal Board later found that "it appeared clear from the evidence that no-one was aware of the extent to which its [the factory's] operations were going to detract from the amenities of the general neighbourhood".[15]

Figure 2.1 shows Meadow Mushrooms in relation to the surrounding residential areas.

The incompatibility of the factory with the residential area was first the subject of formal complaints from the residents around 1975. The following year, Paparua County Council notified a change to the district scheme, putting constraints on factory farming near residential areas. Although under this change Meadow Mushrooms became a non-conforming use, it could continue normal operations under existing use rights as long as there was no significant change in character, scale or intensity. In other words, this scheme change installed future controls, but did not remove existing odour nuisance.

In 1977 and 1978 Meadow Mushrooms applied for permission to expand operations. Submissions from residents to planning hearings made it clear that odour nuisance from the factory was a continuing feature. The Council refused both applications noting:

> *"It is not conceived that by attaching suitable conditions to any consent a significant reduction in present difficulties can be achieved and it considers that granting the application would result in further detraction from the amenities which would be a negation of the objectives of that part of Change No. 4 relating to factory farming.*
>
> *"The present site is not considered suitable for certain aspects of the company's activities, in particular the composting and fumigation processes, and it is felt that if the farm is to be further expanded, those processes will need to be removed to a site more remote from the urban area."*[16]

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13 Exact statistics unavailable, but longtime local authority staff and residents agree that of some 350 households most frequently affected, no more than 20 have been added since Meadow Mushrooms established (V Vabulis, D McAven, pers comm).

14 I Dawson, pers comm.

15 Meadow Mushrooms v Paparua County Council (1977) 6 NZTPA 327.337, p.331-332.

16 Record of Council decision, 8 June 1977.

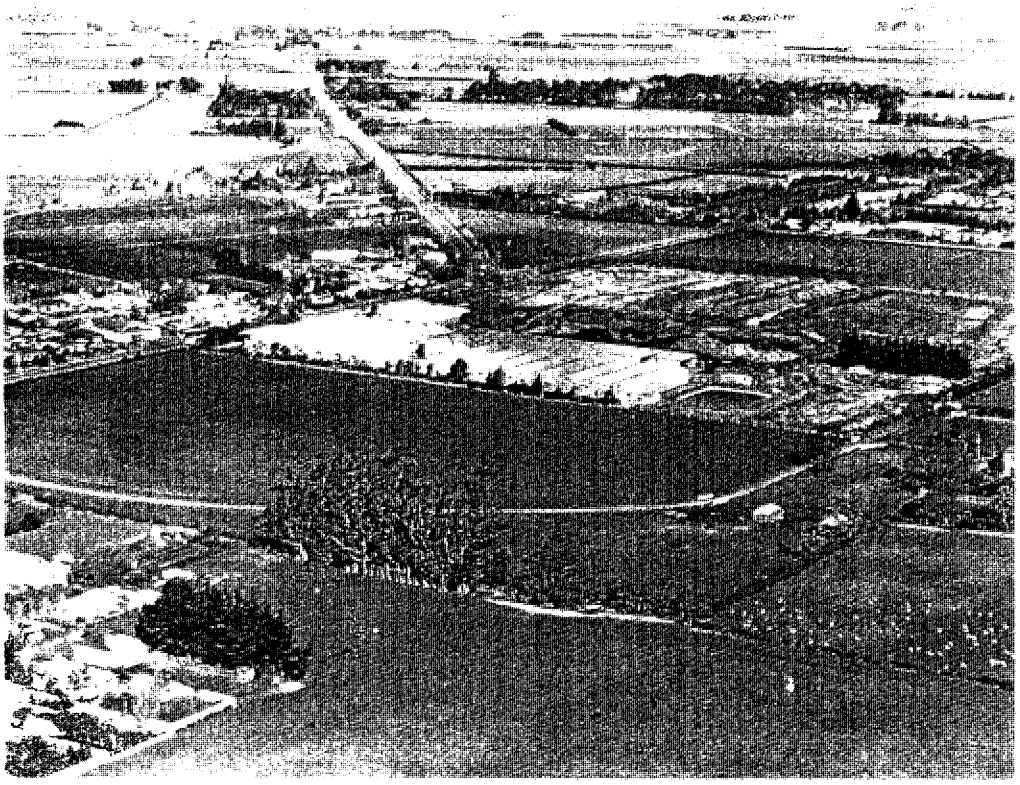

Photo credit: Paparua County Council

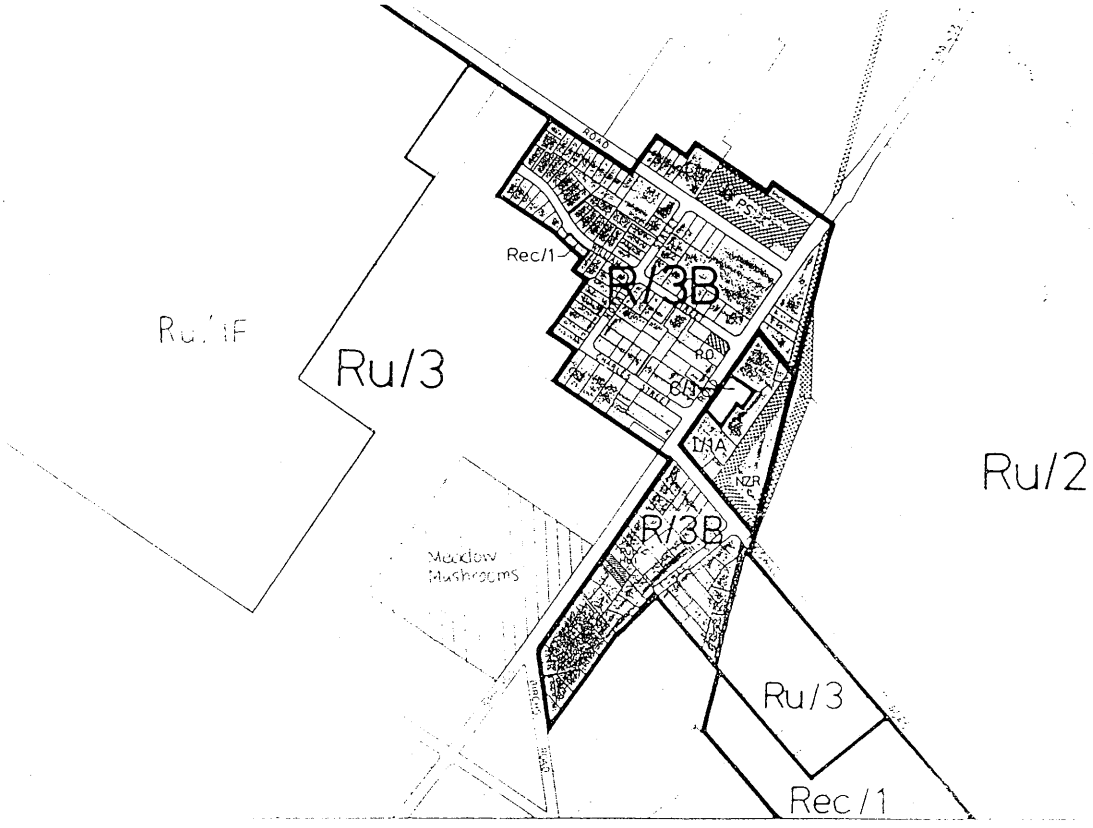

Figure 2.1: **Meadow Mushrooms site in relation to surrounding residential areas and zoning.**

When Meadow Mushrooms expanded production in 1983 to create compost at Prebbleton for growing sheds both there and at a Wilmers Road site, the Council sought a declaration from the Planning Tribunal as to whether this exceeded the Company's existing use rights. The Tribunal found that there had been a change in scale and intensity, but not a sufficiently significant one. Residents requested that the Council appeal this finding, but the Council declined.

From April 1973 to 1983, the Council had powers under the Clean Air Act to enact bylaws in order to license Meadow Mushrooms. Following the first appeal hearing it was decided to license Meadow Mushrooms as a CAA 2nd Schedule Part C process. The company made application in 1978 and was issued licences each year until the 1983 amendment to the Act. This was mainly done to control the emission of methyl bromide.

At no time did Paparua County Council exercise its nuisance control powers under s.77 of the Town and Country Planning Act. This possibility was available for over seven years in relation to Meadow Mushrooms.[17] Such a step, however, would have required the Council to serve notice to cease the use or to specify what action needed to be taken to abate the nuisance. Making the process more aerobic would have changed (not eliminated) the odours, and furthermore, during 1985-86 the Company claimed that anaerobic composting was essential during that part of the process. Moving the composting to another site was an abatement remedy recognised by the Council and advocated by residents, but as it required purchase of land elsewhere it may not be construed as a means "reasonably available to such user of the land" as specified in s. 77(7). However, this was never tested before the Planning Tribunal.

In 1983, Council staff received complaints that odour from the site had increased, and a number of these complaints were confirmed by the Chief Health Inspector.[18] These complaints were passed on to the RAPCO, who was then developing a Clean Air licence to cover Meadow Mushrooms. The RAPCO advised the Council that it could prosecute for nuisance under the Health Act, as the licence was under appeal.

In 1985, nine years after complaints began to be received by residents, the Council did prosecute Meadow Mushrooms under the Health Act. The Council's prosecution succeeded in the District Court, but was overturned in the High Court.

As a result of this prosecution and appeal, the presence of nuisance was demonstrated, but s.29(1) of the Health Act was interpreted to allow nuisance to be created as long as the process creating the nuisance was 'necessary' to the business on that site.[19] Anaerobic composting was declared necessary by the Company.[20] Independent advice

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17 S.77 cannot be used where a Clean Air Act licence is in force, but the Clean Air Act did not cover composting until 1983.

18 Minutes of the Paparua County Council Finance Committee, 29 March 1983, p. 82.

19 Paparua County Council v Meadow Mushrooms, 15 July 1986, Hay J, Christchurch District Court, CRN Nos 5009030192-3 and Meadow Mushrooms v Annan (unreported 9 January 1987, Hardie Boys J, Christchurch, AP213/86).

20 Evidence of Mr Giles of Meadow Mushrooms in 1986. However, Meadow Mushrooms in fact moved to a principally aerobic composting method in 1988, as overseas research showed that it produced better compost, which in turn produced more mushrooms.

to counter this claim was not sought by the Council, although expertise was available through the Department of Health.[21]

By 1987 the nuisance abatement remedies under the Health Act, Town and Country Planning Act and Clean Air Act were effectively unavailable to the Council in relation to Meadow Mushrooms, the first made inapplicable through judicial interpretation and the latter two by amendments to the Clean Air Act.

In October 1989, scheme changes came into effect which increased the intensity of rural dwellings around the factory site. Although by this stage aerobic composting methods were used, this change had the effect of exposing more potential dwellings to odour nuisance.

By 1990, the Council had been involved in six Planning Tribunal, District Court or High Court cases, and the odour nuisance problem still had not been resolved. In August 1990 Council representatives joined in a delegation to the Minister of Health. A focus of the discussion was the "complete failure of legislation" and means to better enforce the Clean Air licence administered by the Department of Health.[22]

Determining that it had exhausted statutory remedies, Selwyn District Council sought a legal opinion in 1990 on whether it could assist in some way with a public nuisance action under common law. While not impossible, this avenue would require leave from the Attorney-General, and would require proof that there was public nuisance greater than the existence of private nuisance which could be protected through private action under common law.[23]

Previous and present staff members of Paparua County and Selwyn District Councils describe the staff as being frustrated in their inability to control odour nuisance in Prebbleton and the Council as wary of incurring further fruitless legal expenses after their court cases against Meadow Mushrooms.[24]

The Council assessment of the situation in 1990 was:

> *"The Council acknowledges that odour nuisance is a very subjective matter which does not easily lend itself to quantitative assessment. However, it is in no doubt that the residents' complaints are justifiable... Total removal of all smells may not be possible, but a substantial reduction should be achievable, and must be required. The Council is convinced that as the first option, action...by the Health Department must be initiated."*[25]

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21 The RAPCO in fact contemplated a prosecution at that time under the 'best practicable means' (s.7 of Act), as the composting methodology was not up to international standards for the industry (D Pullen pers comm).

22 Notes from meeting with Minister of Health 8/8/90, Selwyn District Council files Meadow Mushrooms/F4.

23 Letter of 5 March 1991 from J R Milligan to Anthony Harper, solicitors for Selwyn District Council.

24 W Brixton, I Dawson, R Nixon, pers comm.

25 Selwyn District Council, 1990.

In August 1991 the Council received applications from Meadow Mushrooms for a building permit under existing use rights and, without prejudice, a planning application for installing new tunnel technology for compost. The Commissioner was asked for and provided advice on these applications to the Council, under s.16(1)(b) of the Environment Act *(Appendix II)*. The building permit has now been declined by the Council and the Company have not yet asked for the planning application to be progressed.

The Canterbury Regional Council will also have nuisance control powers under the Resource Management Act after 1 October through regional plans and discharge permits.

2.1.3 Department of Health response[26]

A summarised sequence of events is set out in Table 2.1.

The Department of Health could not issue a licence to Meadow Mushrooms under Part A of the Second Schedule of the Clean Air Act until 1983, when regulations issued under the Act to cover composting of 'organic waste' took effect.

This first licence, dated 18 November 1983, had a condition that "the composting processes shall be operated by the licensee in such a manner that objectionable odours are not carried beyond the boundary of the licensee's premises". 'Objectionable odour' was defined as:

> *"...an odour which may be harmful or injurious to health and welfare, or which unreasonably interferes with the comfortable use and enjoyment of life and property or which creates a nuisance.*
>
> *"Without limiting the definition of objectionable, and objectionable odour shall be deemed to exist on receipt of a sworn affidavit from at least ten persons exposed to the odour indicating that they find it to be objectionable in their usual place of occupancy, or if in the opinion of an officer duly appointed in pursuant to Section 5 of the Clean Air Act 1972 there exists an odour perceived as objectionable outside the boundary of the licensee's premises".*[27]

Meadow Mushrooms appealed this licence, arguing in part that the inputs to the composting were not 'waste materials', but industrial 'raw materials'. This appeal remained unheard for six years. The delay is attributed to a number of reasons. The solicitors for the Company did not initiate moves to have the appeal set down for a hearing, and after two years the Crown Solicitor too was against pressing for a hearing. The Department's limited resources were being used to support the County Council in its prosecution under the Health Act and to assist an Ombudsman's investigation. The Department, in hindsight, now acknowledges that the matter, despite its complexity,

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26 Unless otherwise noted, information about DOH and RAPCO actions has been obtained from D Pullen and T Brady.

27 Licence No. HD/16/0053/83, p.2-3.

could have been handled more authoritatively.[28]

While the appeal remained unheard, 'pro forma' licences were issued to the company which could not be enforced. In 1986, the RAPCO sought to prosecute Meadow Mushrooms under s.7 of the Act, as the methods of composting used were not the 'best practicable means' available. Again, the Department of Health head office solicitors were not supportive.

Following lodgement of the appeal against licence conditions, Meadow Mushrooms lodged a complaint with the Ombudsman that the Department of Health had treated the Company unfairly in relation to other mushroom farms in the country. This complaint was not substantiated as no other operations came within the licensing authority of the Department.

In 1988, five years after the appeal was lodged, an amendment to the Act to cover "production of compost from raw materials" and referring to amounts of composting materials actually present rather than capacity, took effect, and the Department and the Company began to negotiate a new licence. The Company agreed to drop the appeal in exchange for compromises in the original licence conditions proposed by the DOH regional office, and the appeal was struck out in 1989.

In June 1989, a licence was issued to Meadow Mushrooms which was not appealed. Renewed in April 1990 and in force until 1992, this licence requires that all air pollutants be rendered "harmless and inoffensive", but in relation to composting this will be satisfied if the pre-assembly piles and windrows are at least 95% aerobic and the concentration of any odorous air pollutant does not exceed five times the odour threshold. The previous definition of objectionable odour has been removed from the licence.

The aerobic nature of the compost is not monitored through measurement of oxygen content, but through visual inspection by Company staff; compost produced aerobically has different physical qualities than that produced anaerobically.[29] However, determining exact percentages of aerobic content with this method is impossible, and therefore in the absence of more accurate testing the RAPCO does not know whether this licence condition is being met.

Odour thresholds for common odorous compounds are 'standard' and available through the international scientific literature and some can be checked in ambient air. Changes in the composting process, however, appear to change the composition of gases emitted and measurement of these compounds in ambient air is not possible with the present equipment available to the RAPCO. New equipment is in the process of being field tested. In other words, ever since the licence conditions were first set two years ago, it has not been possible to monitor or enforce this licence condition.

The 1990 meeting of residents and District Council representatives with the Minister of Health focused in part on the unenforceability of the licence conditions. It was resolved that a new condition was required on the licence to define and regulate emission of

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28 DOH letter to PCE, 23 July 1991, Ref 340/56/1.

29 L Wade, pers comm.

'objectionable odours'.[30] This brings the issue full circle to the conditions of the original licence proposed in 1983, which had exactly such a clause in it. Meadow Mushrooms appealed that licence then, and have called the newly proposed (and virtually identical) licence condition "totally untenable" now.

DOH staff are of the opinion, based on past experience, that it would be fruitless to try to force new licence conditions on the present Meadow Mushrooms operations, and wish to pursue enforcement of existing conditions. They are also of the view that without 'court quality' scientific data, they cannot succeed if enforcement action is appealed. They have on a generic level identified the key odorous compounds which are present, and believe new equipment will allow 'court quality' data to be collected on the actual levels present. Whether this is so, and how long it will take, can only be demonstrated in practice.

The RAPCO also sees some hope in tunnel composting, as gases can be emitted to the environment from a 'point source' where odour control mechanisms can be installed. Overseas research indicates that ammonia will be produced and possibly some other gases but exhaust air can be easily washed or filtered and treated with existing odour control technology, if ammonia is not dispersed rapidly enough in the air.[31]

The Clean Air licence allows for the consideration of changes in technology. A condition states that the company must notify the licensing authority of any change in process. A major change would trigger a licence condition review.

DOH staff are aware of overseas developments in composting technology and odour control, and know in general of technological improvements currently being developed to better control odour nuisance. In recent years, however, due to commercial sensitivity, the DOH has had increasing difficulty in obtaining detailed information to assess industry claims. With the advent of the Resource Management Act, the responsibility for control of odour nuisance will rest with local authorities, who likewise will have difficulty in obtaining technical information.

The RAPCO at no time exercised powers to deny a licence under s.29 of the Clean Air Act. This would have required being able to demonstrate that Meadow Mushrooms operations were or may have been detrimental to the health of persons living or working in the vicinity. Health tests of residents in 1977 showed that factory operations in relation to methyl bromide uses were causing stress, but the RAPCO is of the opinion that 'court quality' definitions of health and proof of danger to health were unavailable. Stress to residents is not of the same order of magnitude as imminent danger from disease or toxic chemicals, so that the applicability of these powers to the Meadow Mushrooms case is open to broad interpretation.

Residents have complained of a lack of liaison with the RAPCO. They describe, for instance, being asked to participate in surveys in 1983 but never being advised of the results, of having no feedback on individual complaints or regular updates of progress

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30 Letter from Minister of Health to MP for Selwyn, 18 September 1990.

31 D Pullen, K Rolfe, K Mahon, pers comm; Gerrits and van Griensven 1990; Bradwell 1990.

over the years, and most recently of seeing people out 'trying to capture odours in plastic bags' but not being advised of research aims or outcomes. The residents were at one stage asked to stop contacting the RAPCO with odour complaints as it was causing him considerable stress.[32]

The RAPCO is not obliged by law to involve the public, and Clean Air licensing does not require a public process. On the other hand, there is no legal or administrative impediment to better RAPCO public relations, in fact the Minister of Health in response to the delegation in August 1990 directed the RAPCO to involve the residents in revising the Clean Air licence conditions. Large workloads, constraints on resources, and ongoing inability to resolve problems seemed to have mitigated against better public relations in this case.

2.1.4 Company response [33]

Meadow Mushrooms is a successful business with both domestic and international markets for its mushrooms, and has been the recipient of an export award. The Prebbleton and Wilmers Road sites presently employ some 450 people, primarily part-time mushroom harvesters. The composting and tray preparation at the Prebbleton site employs some 20-30 of the total. Most of the employees, however, are not residents of Prebbleton.

The Company also successfully recycles some 10,000 tonnes of manure and 350,000 bales of straw per year into mushrooms and a compost valuable for soil conditioning.

The Company was founded in 1970. The co-founder and managing director had overseas mushroom farming experience, and he and other staff subsequently made a point of attending mushroom growers conferences, courses, and companies overseas so as to keep up with new developments. The current managing staff continue to maintain these overseas links and experiment with techniques to make production more efficient.

When Meadow Mushrooms established in Prebbleton, the Company viewed the site as an ideal location, as it was near sources of raw materials (animal manures and straw) and a potential workforce. The Company now states that it didn't envisage the level of expansion its business would undergo, nor that Prebbleton would become a dormitory suburb of Christchurch.

In 1978-79 staff witnessed the use of odour masking with deodorant spray at an overseas mushroom factory surrounded by urban development. This technique was imported to Meadow Mushrooms, but not until four years later as there were doubts as to its effectiveness. The New Zealand Agricultural Engineering Institute which assisted the company, described the deodorant system as a "band aid approach",[34] and advised on improved straw wetting methods, mixing and turning regimes to decrease odour.

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32 Members of Prebbleton Environmental Assoc., pers comm.

33 Unless otherwise noted, factual information about the company has been obtained from R Young and L Wade, pers comm, and R Giles 1986.

34 Giles 1986, p.65.

As described in mushroom growing textbooks prior to the mid-1980s,[35] a period of anaerobic composting in pre-assembly piles was a recognised technique to break down the waxy outer covering of the straw to speed wetting and decomposition. It was not an essential process, but 'standard procedure' where more sophisticated wetting/mixing machinery was not in place. It was stated that there was no disadvantage with this process "if you don't have people around you".[36]

Company management was aware from overseas travels of the existence of mixing/wetting machinery which effectively eliminated the anaerobic pre-assembly stage, but it was used principally in larger operations.[37] Accordingly Meadow Mushrooms conducted its own experimentation on improving air circulation in the pre-assembly piles, which went on for 2-3 years. In the end, a patented large-volume wetting and mixing machine was purchased from overseas, primarily as a prerequisite to a move to tunnel composting.

Once anaerobic pre-assembly piles were eliminated, the previous cocktail of anaerobic odours was largely replaced by those typical of aerobic composting. This would have changed the nature of the odour nuisance, but as noted in section 2.1.1, large-scale aerobic composting can still elicit valid complaints from residents.

Over the 1978-1983 period, the Company increased the number of compost-filled trays of mushrooms prepared each week from 340 to 800. When challenged before the Planning Tribunal by the Council as to whether this exceeded existing use rights, the Company explained it had made the operation more efficient through reduced composting time and a better conversion rate from dry materials and reduced amount of compost per tray. Recently the Company has also noted increased efficiency through use of greater mechanisation, improved growing techniques, and more productive hybrid mushroom strains.

These factors can generally explain the use of the same composting site to produce growing media for more mushrooms, but provide no quantitative idea of whether the total amount of organic matter processed on site has increased or decreased over time. Figure 2.2 shows the composting yard in 1979, 1983 and 1991, showing the sequence from a very large pre-assembly stack, to several smaller ones plus formed aerobic windrows. The same composting area is used, but the composting time is now shorter per batch.

In 1990 the company began experimentation with 'tunnel composting' (also called 'environmentally-controlled composting', 'indoor composting', and 'accelerated assisted composting').

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35 e.g. Tunney 1981, Atkins n.d., Vedder n.d.

36 Giles 1986, p.78.

37 Giles 1986, p.69.

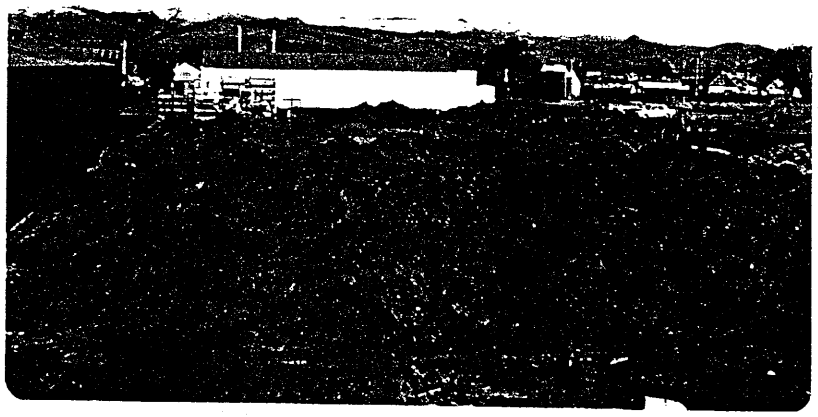

Photo credit: Meadow Mushrooms

1979: showing large pre-assembly stack

Photo credit: Meadow Mushrooms

1983: smaller pre-assembly stack with windrows

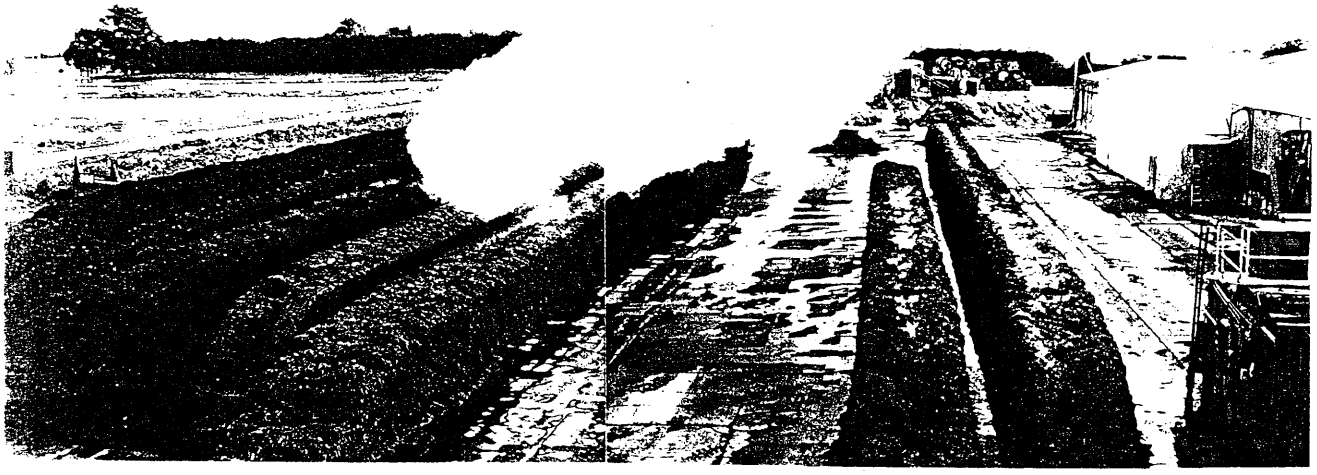

Photo credit: Meadow Mushrooms

1991: predominantly aerobic formed windrows

Figure 2.2: Outdoor composting operations at Prebbleton site.

Tunnel composting has been developed in France, Italy and England in pursuit of a more productive growth medium whereas it was developed in the Netherlands in order to control emissions contributing to odour nuisance and acid rain. Experiments in Australia have focused on both commercial and odour control advantages, and report reduction but not elimination of odours.[38] Meadow Mushrooms stated that they would not consider installing tunnel technology, unless it was commercially advantageous.

Changes to both aerobic and tunnel composting can lessen odour nuisance, the first through eliminating a major source of noxious odours, and the second through offering the opportunity to capture and deodorise gases produced. The Company now contends that large scale aerobic tunnel composting will not elicit complaints of odour nuisance. Apart from ammonia no other odiferous compounds were detected while composting was aerobic, according to research.

The Company has not in the past displayed a particularly cooperative or neighbourly attitude, as has been noted by both authorities and residents. The Selwyn District Council observed that:

> *"...for some years now the Department [of Health] and the Council have borne the brunt of resident anger when better public relations by Meadow Mushrooms would undoubtedly have been beneficial."* [39]

The Company management now accepts that its operations do create odour nuisance "from time to time for some people", and has assessed the options for dealing with that. They are at present:

1. Status quo at Prebbleton;
2. Move composting to another site;
3. Change to 'tunnel technology' at Prebbleton.

The Company has now purchased a proven 'tunnel technology' technique from an Italian firm *(Appendix III)* and applied for planning consents for the new composting process at Prebbleton. The Company has been carrying out its own development work on environmentally controlled composting for nearly three years but it was not until earlier this year that details of a commercially successful operation in Italy became known and were offered on a technology transfer basis to other companies.

After visiting Agrifung in April, senior management returned in June and completed negotiations to purchase their indoor composting technology.

The Company is confident that a similar system producing its total compost requirement could be fully operational at the Prebbleton site within 18 months. The structures required would be located where they currently process compost in the open air but occupy only a third of the area.

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38 Harvey 1990.

39 Selwyn District Council 1990.

Purchase of proven overseas technology has the potential, notwithstanding public scepticism, to alleviate the odour problems associated with composting. However public and independent verification of the general statements of the Company and the Italian suppliers is required, and an assessment of the need for odour control equipment on any new structures to be erected.

2.1.5 Community response [40]

Community actions over the last 20 years relating to Meadow Mushrooms are summarised in Table 2.1. Prebbleton residents have consistently followed 'proper channels', pressuring public authorities to address the problem and presenting their case at legal proceedings. The residents met with in the course of this investigation were rational, reasonable and law-abiding in their approach despite continued disruption of their lives by odour nuisance.

Like any community, there are variations in views and approach in Prebbleton. Some residents have urged more radical action, a considerable number support the community action group, while others do not find the problem serious enough to cause a fuss.

The fact that not all residents were or are unanimous in their response to odour nuisance from Meadow Mushrooms does not discredit the action of the community action groups over the years, nor disprove that an actionable odour nuisance is created by Meadow Mushrooms. As noted in section 2.1.1, public authority staff and judges have stated that the residents have been justified in their complaints.

There have been allegations made that the residents complaining of odour nuisance are an unrepresentative minority. This investigation finds that allegation insupportable. The Prebbleton Environmental Association, which has as one of its aims the control of odour nuisance from Meadow Mushrooms and which supports the current active objectors, counts among its membership people from a majority of the households in Prebbleton.

On the issue of complaints, it is worth noting a comment by the Selwyn District Council:

> *"..the level of complaints is misleading; people give up complaining because no action is forthcoming, not because they don't care."*[41]

The story told by residents who have lived in Prebbleton since the start of Meadow Mushrooms and who have suffered from odour nuisance for over 15 years, is one of many complaints, petitions, attempts to document odour, and court battles; frustration and anger as the odour nuisance continued unabated despite various assurances and actions by authorities; and finally lack of faith in the ability of laws and officials to protect the public, rather than protect the Company.

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40 Unless otherwise noted, documentation of residents' actions and views is provided by members of the Prebbleton Environmental Association and statements made at the public meeting in Prebbleton on 24 May 1991.

41 Selwyn District Council 1990.

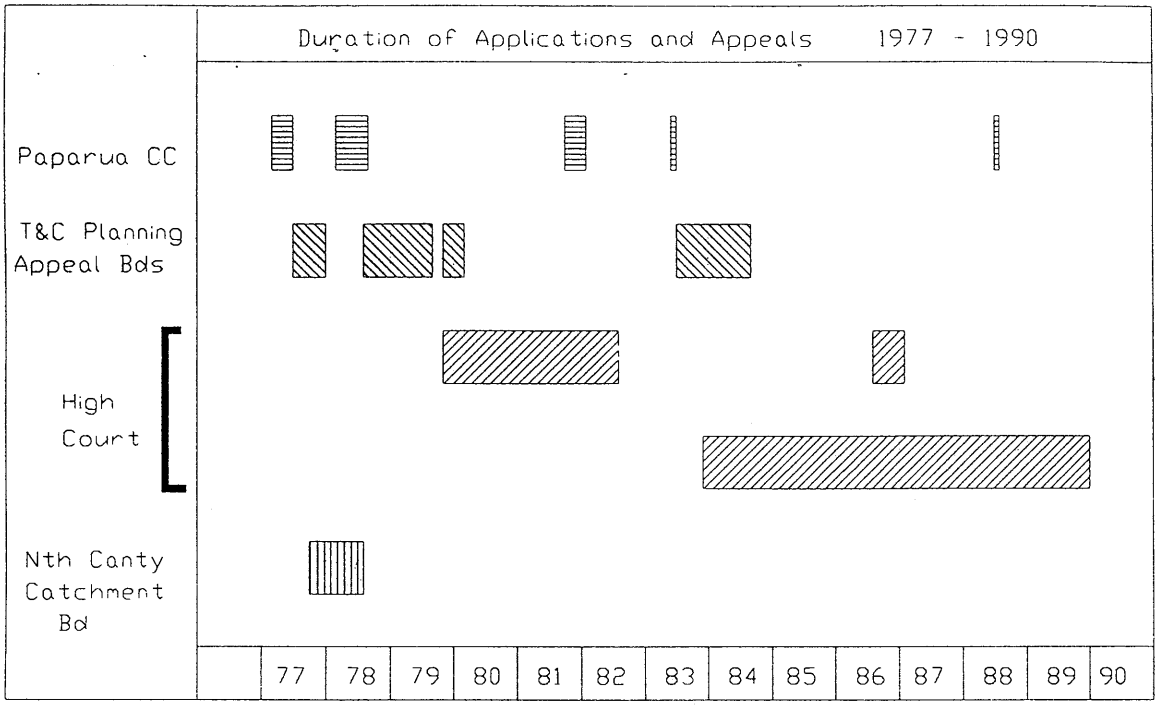

Figure 2.3: Legal proceedings involving Meadow Mushrooms, prepared by the Prebbleton Environmental Association.

Figure 2.3 is a summary of legal proceedings involving Meadow Mushrooms prepared by the Prebbleton Environmental Association. From time to time the residents have been advised (by legal counsel for the Council and public authorities) that they should exercise their rights under common law and take the Company to court. On their own legal advice, however, they decided not to proceed with such an action in the brief time when the matter was not *sub judice*. Further, it appears that a belief that residents should be protected by public authorities and not have to pursue expensive legal action themselves has mitigated against this potential remedy. A proposal that Selwyn District Council financially assist the residents in a common law action has not progressed.

Under the Resource Management Act, the residents will have the opportunity to apply to the Planning Tribunal for an enforcement order (s.314). This can be taken regardless of whether there is a resource consent in operation if anything is done that

> *"is, or is likely to be noxious, dangerous, offensive, or objectionable to such an extent that it is or is likely to have an adverse effect on the environment."*

This is however still likely to be a costly exercise for the community.

None of the residents spoken to by the investigation team objected to Meadow Mushrooms operating its business *per se*, stipulating only that it do so without interfering in their daily lives through imposition of objectionable odour. The remedy sought most consistently by the residents has been shifting of the composting process to another site

more remote from residential areas.

The prospect that 'tunnel technology' at the Prebbleton site could alleviate the nuisance is viewed with considerable cynicism by residents, who recollect over the years the promise of many 'remedies' which proved ineffective. Planning consent applications will be rigorously opposed by some residents. Their faith in the Department of Health to successfully measure the odours concerned and finally enforce the Clean Air licence is nil. In the words of the Selwyn District Council:

> *"Given the protracted history of odour problems over many years, the Council feels that to expect residents to 'have faith' yet again is asking too much."* [42]

2.1.6 Discussion

Resolution of this longstanding odour problem may now be possible. However the history of this case study identifies deficiencies in systems for protecting a community from an objectionable nuisance and in the performance of public authorities.

A legacy of frustration

The bottom line in this case is that, despite over 15 years and various actions by public authorities, an odour nuisance continues to be imposed on the residents of Prebbleton and surrounding areas. The odour may have changed from previous years when large anaerobic pre-assembly piles were used, but nonetheless odours still occur on a regular basis and this is unreasonable to expect in a residential area.

Both the Company and the public authorities have acted within the statutory law (the case has never been tested under common law). Unfortunately, the residents have continued to look for their protection from legislation which does not, in fact or by interpretation, actually guarantee such protection.

The issue has been subject to legal challenge eight times; three efforts by public authorities or residents to control nuisance caused by Meadow Mushrooms, and five times through appeal by the Company. There have also been two investigations by Officers of Parliament, one initiated by the Company and one by the residents.

The issue has consumed a considerable amount of time and resources, on the part of ratepayers, taxpayers, public authority staff, residents, and the Company itself. From the Company's perspective, it has remained a profitable proposition to stay located in Prebbleton and fight the community in the courts. From the residents' and public authorities' point of view it has been a profitless drain on valuable resources.

Inadequate response by the Department of Health

One of the key factors in the lack of resolution in this case has been the performance of the regional and head office staff of the Department of Health. Firstly, there was a

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42 Selwyn District Council, 1990.

lack of priority and an inadequate approach to reforming the Clean Air Act so as to cover large composting operations as a potential source of offensive odour. One of the key results of this inadequate effort was that six years elapsed when Meadow Mushrooms appealed its first Part A licence on the grounds that it was not covered by the schedule and the Department failed to resolve the situation.

Secondly, the Department has failed to implement licence conditions which can be monitored and enforced. The reliance on as yet unproven technical measurements in lieu of RAPCO and community assessment of objectionable odour was an unfortunate choice. The anticipation of the need for a trial period with tunnel composting instead of requiring odour control devices from the outset is a less than proactive stance. It appears that obtaining Company agreement was given greater weight than protection of community amenities.

With the passage of the Resource Management Act, the Department of Health role will be replaced by the Ministry for the Environment and regional councils. It is important that the mistakes of past years are not repeated under the new regime.

Toward resolution of the problem

The potential to create odour nuisance is an inherent risk of intensive and large scale composting of organic materials. Although it is essential to create compost in order to grow mushrooms in commercial quantities, it is not necessary to locate the composting immediately adjacent to people's homes, nor in the same location as the mushroom growing sheds.[43]

As there has been, until very recently, no commercially feasible technology for creating mushroom compost while emitting no odour nuisance, the Meadow Mushrooms problem is essentially one of incompatible yet adjacent land uses.

A potential to produce mushroom compost without imposing odour nuisance on neighbours may exist with tunnel composting. The Company states that this is so but has provided no technical information or documentation. In response to a request for information as part of this investigation, the Italian firm also provided no details. It stated that the technology produces very little odour, and that any ammonia produced can be controlled by washer systems. Any other odour (though slight) can be eliminated with single and cheap biofilters.

The current Clean Air Act licence held by Meadow Mushrooms requires the Company to notify the local authority of any changes it proposes to make in its operation or technology.

An effect of the Resource Management Act when it comes into force on 1 October 1991, is that an existing Clean Air Act licence becomes a discharge permit, and the conditions of the licence continue to apply to the activity. Discharge permits become the responsibility of regional councils.

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43 Meadow Mushrooms creates compost at the Prebbleton site and this is trucked to growing sheds at the Wilmer Road site 2 km away (R Young, pers comm). In the Netherlands central composting facilities distribute compost to mushroom growers (D Pullen pers comm).

Accordingly, a proposal by Meadow Mushrooms to change to tunnel technology, would require notification to the Canterbury Regional Council, and afford the Council the opportunity to review the conditions of the permit.

It is essential that the law requires a rigorous and public assessment to be carried out to evaluate the environmental impacts of the technology proposed, and to determine whether additional odour control measures are needed. The Canterbury Regional Council advises that it envisages that public notice would be given, and a hearing held in the course of such a review.

It appears however, that by virtue of s.418 of the Resource Management Act, for a transitional period, an operation dealing with waste materials, or composting organic materials, may discharge contaminants, such as odour, to the air, and the general prohibition on discharges does not apply.

Meadow Mushrooms would fit within the specific exemption, and accordingly may discharge without a discharge permit. The local authority would be unable to review the conditions of operation or impose new conditions, even in the event of a change in technology. The exemption afforded by s.418 is for three years or until a regional plan sooner removes the exemption or introduces controls.

The situation is unsatisfactory in that a number of activities which are currently subject to licensing may, from 1 October 1991, through an oversight, operate without environmental controls for up to three years. Therefore a recommendation will be made to the Minister for the Environment that the exemption not apply to these activities.

This will not however provide surety that a statutory mechanism will exist in the immediate future to assess odour control requirements on the new technology.

Other possibilities for statutory procedures to allow an assessment of the need for odour control, such as land use consents and enforcement provisions such as abatement notices or enforcement orders are discussed in the Commissioner's letter to Selwyn District Council *(Appendix II)*.

The conclusion is that as a mechanism for assessing or imposing control requirements, use of the land use consent hearing does not appear as appropriate as a discharge permit hearing.

Enforcement provisions are intended as a backup system, not as a major control mechanism. Information costs are likely to be high, and if a legal appeal transpires, costs may ensue that neither the Council nor the residents can afford.[44]

Given the past history of the case and the uncertainties identified in the legislation with reference to public assessment and statutory controls, the conclusion must be that installing the new technology next to the existing residential area in Prebbleton would not be a prudent environmental management practice.

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44 W Brixton, pers comm.

Likewise relocation of the existing composting methodology to another site, simply transfers the problem elsewhere unless a very isolated situation is found along with some method for establishing a permanent buffer zone.

To overcome the statutory problems outlined and reduce the area of influence, the Company would need to install the tunnel composting equipment on a site away from Prebbleton in rural land. The new technology should mean a decreased possibility of nuisance and if a discharge permit is not required for three years there will be time to test the process and control requirements.

If the new technology successfully controls odour nuisance there will be no need for extra equipment. If there is the occasional nuisance from pre-assembly piles or the process, it will not be occurring in a residential area and would not extend to the 4-5 km radius experienced under the old technology.

The necessity for relocation of the composting facility to a rural location would be lessened if the company agrees to install equipment to control potential odour emissions from the tunnel houses.

Residents have continued to express some doubt as to the odour-free nature of the new technology and the ability of the authorities to control odour nuisance.

More generally in a situation where the statutory provisions have been tried, but found wanting, and the problem persists, the residents still have the option of a private nuisance action. Some may object to having to take such a course of action which will inevitably be expensive, when the matter is within the responsibility of a public authority. Proceedings may be taken by a person whose enjoyment of their land is adversely affected by the odours. Alternatively, one or more of the residents could sue on behalf of, or for the benefit of, all of the persons affected.

Another possibility is a public nuisance action. It appears that local authorities, which in New Zealand are constituted as body corporates, may not institute a public nuisance action in their own name. Instead, the local authority would need to obtain the approval of the Attorney-General to take a relator action on the local authority's behalf.

In determining whether the use which is causing the odour is an ordinary use, carried out in a reasonable way, and with due regard for neighbours, the court would look at whether there is a viable alternative for carrying on the business without creating an odour nuisance.

2.2 Alliance Group Kaiapoi Plant, Kaiapoi

This case study addresses another organically based industry, the meat industry, which has been the source of severe odour nuisance for the last four and a half years in Kaiapoi. Final resolution of the problem has now occurred with the Company's decision to close the major part of the plant.

2.2.1 The problem

The Alliance Group Kaiapoi Plant freezing works (formerly North Canterbury Farmers (NCF)) was established in 1916 in Eyre County on the outskirts of Kaiapoi Borough. Over the following decades, the plant changed and expanded in operation, and likewise the town expanded. From what was essentially a rural surrounding, the plant became upwind of an extensive subdivision to the south-west.

The plant always had a characteristic 'freezing works smell' associated with it. Residents have commented that this was to be expected of an industry of this type and was tolerated. Although there were complaints about odour nuisance to the local authorities over the years, these were infrequent.

The odour problems which affected large areas of Kaiapoi from 1987 were primarily from a new rendering plant on site (*see Table 2.2*). The investigating team were told that odours varied from a "cooked meat, fatty" smell which was just acceptable to "extremely strong nauseating stenches".

Rendering plant odours are attributed to a variety of organic compounds; aldehydes and fatty acids from the fats, sulphides and mercaptans from the hair, nails and skin.[45] Quality control of raw materials is very important as putrescine and cadaverine are two extremely odorous organic compounds associated with decaying flesh.

In this instance the odour nuisance arose out of the drying method used (direct gas firing) and was a new feature of the low temperature rendering process. By September 1988, however, odours were essentially controlled by the establishment of a filtration plant for emitted air.

Alleviation of this odour problem was masked by another major odour nuisance which resulted from a change in the method of liquid effluent disposal to spray irrigation onto adjacent farmland. Within a very short time the land area was completely overloaded with ponds of effluent, decomposing grass cover and resulting anaerobic 'open sewer' sulphide based smells. In response to residents' complaints about odour, particularly from the housing estate downwind of the plant, irrigation was stopped in May 1989 and an alternative effluent disposal system started.

Odour problems have not, however, ceased since that period. Residents at times identify three or four different odours and describe them as "manure, dank/rotting/heavy, rotten

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45 Rolfe, 1980(b).

TABLE 2.2 : SEQUENCE OF EVENTS: Alliance Group Kaiapoi Plant Case Study, Kaiapoi

YEAR	COMPANY	TERRITORIAL AUTHORITY	DEPARTMENT OF HEALTH	RESIDENTS	OTHER
1983		Eyre County District Scheme established. AKP sited in special zone (June).			
1986	Settling ponds source of odour. Decision to build rendering plant - needed within 1 year (September). Obtained documentation of compliance with District Scheme (November).	Boundary adjustments and new residential zone established in KBC to south-west of AKP.	Discussions on new plant with AKP (November).		Property developer assured that settling ponds would be phased out and new land effluent treatment established.
1987	Company applies for s.31 approval. Full specifications provided (April). Received letter from MIRINZ with general guidance from DOH re odour nuisance control (July). Rendering plant commissioned. Rated throughput of 15 tonnes/hr but operationally maximum of 12 tonnes/hour (September). Odours very apparent (September).	KBC receive and note complaints of odour nuisance(September).	Some design modifications made and company warned that extra odour control equipment might be required. No documentation of approval of s.31 application. Rendering plant performance evaluation (October).	Complaints of odour nuisance from all Kaiapoi township area, particularly from new subdivision (Country Life Estate) to south-west of plant (September).	
1988	Agreement to install soil biofilter (March). Soil biofilter commissioned. Odour persisted as problem with compacting and drying out (August). Company apply for licence (20 August). Medium replaced in soil biofilter and satisfactory control of odour (September). Commencement of land based irrigation system for disposal of treated effluent (September). Overloading occurred because of slower infiltration rate than expected and greater effluent quantity with poorer quality than expected from the rendering plant. Ponding led to anaerobic breakdown of waste and grasses resulting in odours and run-off to stream (October on). Started composting solid waste material (October).	Concern expressed at KBC meeting (April). KBC (as adjacent loc. authority) receive notification and write to DOH to ask for clarification of draft CAL conditions (June). No reply received. Complaints received about odour from liquid effluent area (October on). KBC arranged meeting of all official parties re odours and water quality (December).	Biofilter design discussed (February). Design and construction approved (March). 1st draft of CAL being discussed (April). Last draft (20 July). Licence granted. DOH now administering air pollutants from all processes on site. Cl. 22 stated no changes to plant or process which will change air pollutants emitted without prior consultation (September). Complaints passed to AKP.	Residents continue to complain to Council and company.	J. Gerard MP for Rangiora writes to PCE for enquiry re odours and water rights (May). PCE replies with result of investigations - biofilter being installed and water right compliance being checked (August).
1989	Commissioned evaporator in rendering plant to reduce stickwater effluent volume load (January). Letter to KBC explaining blocked drain problems (April). Total failure of land irrigation system. Irrigation ceased (May). Task force established to assess effluent system; AKP, scientific consultants, KBC rep. (May). Letter to residents explaining actions (May). Taskforce findings - separation of effluent streams, decrease water usage.	Eyre County amalgamated with Rangiora to form RDC (April). KBC meeting notes more complaints. KBC admits "smell objectionable". Resolved to ask RDC for appropriate action re non-compliance with licence (June).	Application for renewed CAL (14 March). CAL expires (31 March). New CAL issued. Includes general section on disposal of solid and liquid waste (Cl. 26 especially) (June). Informal discussions with R. Davis (taskforce consultant) and attended some meetings if asked. Communicated with NCRWB.	Residents write to Gerard (MP) re odour and water rights (May)	Gerard MP informs PCE - still major concern (May). NCRWB grant 2 year temporary water rights to discharge to Courtenay Stream to relieve irrigation system (September)[1].

1989 contd	Decision to use biological effluent treatment (August). Re-commissioning of biological tower and rehabilitation of land commences, upgrading of composting facilities, diversion of sludge to compost and filling in of old open offal pits (August on). Odour problems - ducting broke in rendering plant soil biofilter (December). Biological tower - 3rd chain starts and summer temperature (December). Installation of deodorisers - Ecolo system (December).	Meetings with AKP to discuss task force report (June). Plant now in WDC area as a result of local body reorganisation. KCB local community board (November).	Contacted by AKP re ducting failure (December).	Concern about ongoing odour events. Residents agree to monitoring for the company (December).	NCRWB becomes CRC (November).
1990	Company ringing resident monitoring group and responding to complaints. Major odour event. Tracking of odours difficult - could be land spray drift, biological tower, compost, sludge rising in settling ponds. Land rehabilitation proceeding and approximately 60% of effluent irrigated daily. Aim to clear holding ponds each 24 hours (February). Odour events attributed to biological tower and pump failure for effluent holding pond (October). Design for tower cover and extractor fan to take air to compost soil filter (October). Construction (Nov-Dec). Major odour event (November).	KCB support water right application to Waimakiriri River "will alleviate much complained of smell problems". KCB ask AKP for effluent disposal management plan (February). Reply thought inadequate but no further action until after water rights (March). WDC ask for a report on progress and regular quarterly reports (February). Note: Some aspect of AKP operations discussed at 7 out of the 10 meetings between February 1990 and February 1991. WDC letter to AKP requesting information re odour event (December).	Joint inspections with CRC and attended some meetings. AKP discuss biological tower cover and filter (October).	Residents commence monitoring at AKP's request (January). Complaints about major odour event (Jan-Feb). Record kept for a year and analysed in Section 2.2.2. Residents arrange meeting with DOH and KCB rep. AKP ask to appear and present information. Residents reassured that odour problems shortly to be resolved (October).	Gerard (MP) writes to PCE re odour from effluent spreading (February). PCE investigates and replies that company appear to be doing what they can (April). CRC grant water rights for discharge of treated effluent to Waimakiriri River (June).
1991	Dosed effluent with lime to kill faecal coliforms and comply with water right. Anaerobic sludge led to a major odour event (2 Jan- 15 Feb). Plant closed for season due to lack of stock (10 April). Normal off-season activities continued at approx. 60% peak waste flow level. Decision to close plant except for rendering plant and fellmongery (July).	Environmental Health officer reports to WDC Council (February). WDC resolve to take action on odour problems under Health Act (S.23). KCB support action. WDC letter to AKP re proposed action and survey (February). Survey form compiled (March).	Consulted re lime dosing and didn't think it would cause problems.	Residents meeting with DOH and CRC. Residents letter to DOH with copy to MPs asking for action (February). Survey form distributed to residents (April).	Gerard minutes copy of residents letter to PCE (March). PCE commences generic investigation into odour nuisance control (April).

Abbreviations

AKP	-	Alliance Group Kaiapoi Plant(formerly North Canterbury Farmers then Stevens NCF)
CAL	-	Clean Air Licence
CRC	-	Canterbury Regional Council
DOH	-	Department of Health
KBC	-	Kaiapoi Borough Council
KCB	-	Kaiapoi Community Board
MIRINZ	-	Meat Industry Research Institute of N.Z.
NCRWB	-	North Canterbury Regional Water Board
PCE	-	Parliamentary Commissioner for the Environment
RDC	-	Rangiora District Council
WDC	-	Waimakariri District Council

Footnotes

1 The NCRWB (later CRC) has responsibility for water rights but has no authority to consider odour problems from effluent treatment systems.

eggs". "It wakes you up at night if the wind drops"[46] and at worst requires "covering your face with a cloth" in order to sleep at night.[47] Waimakariri District Council memoranda state that "people have been physically 'sick' and nauseated by these horrible smells" and "the smell which appeared to be coming from the Freezing Works, was unacceptable to me from the point of view that had I stayed longer in the area I would probably have been physically ill".[48]

While there are often background odours, major events have been occurring three to four times in a killing season. Table 2.3 gives an analysis of the extent of odours experienced in 1990 as recorded by a local resident on the request of the Company. The odour experienced is very dependent on prevailing wind and weather conditions and is for varying lengths of time, but has been noted to stay in houses long after the outside air has cleared.

Attempts to track the source of major odour events have identified problems with the solid waste composting systems giving anaerobic sulphur-based smells, with the biological tower used for treatment of liquid waste, and with the effluent holding ponds following high pH treatment for faecal coliforms. Intermittent odours are also noticed from the stock holding yards, the irrigation sprays, the turning of compost and resulting from breakdown of mechanical equipment such as pumps.

The last event occurred shortly before the works closed for the season in April 1991. The rendering plant and the fellmongery are still operating at a low level and there is still some effluent being produced but no problems are occurring. These parts of the plant will remain in operation, although the main processing plant is closed.

2.2.2 Department of Health response[49]

The Department of Health (DOH) first licensed the freezing works at Kaiapoi in 1967 under Part V of the Health Act. When the then rendering plant closed in 1976, the licensing of the works as a second schedule part B process was the responsibility of the Eyre County Council.

The DOH again became responsible for the plant in April 1987 when an application was made to construct a new rendering plant. Rendering plants are specified in part A of the second schedule, Clean Air Act. The Department's role as licensing authority was

1. approval of a s.31 application to build, prior to construction; and

2. granting of a clean air licence.

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46 V Henderson, pers comm.

47 C Paterson, letter to DOH, 26 Feb, 1991 .

48 18 February 1991, File No.400-01.

49 Unless otherwise noted, all information in this section is from D Pullen RAPCO, pers comm.

Table 2.3: Anaylsis of Monitoring Results at the Country Life Estate, 1990

Record of Odour Events (days)

	Jan	Feb	Mar	Apr	May	Jun	Jly	Aug	Sep	Oct	Nov	Dec
No record	2	5	11	19	9	9	30	20	26	7	0	24
No odour	10	6	12	6	14	14	-	7	3	8	8	-
light odour	7	2	5	4	2	4	-	-	1	7	6	1
bad odour	12	15	3	1	6	3	1	4	-	9	16	4
Works Activities												
Closed				30		22	31	5				
1 chain						8		26	30	2		
2 chains										29	30	11
3 chains	31	28	18		31							20

Notes:

1. Source of odour record is V Henderson (diary) and Alliance plant activities is the Company. The works were on strike in March and April and no processing of product or waste material occurred.

2. "No record" are days when nothing is recorded, possibly when the diary keeper is away.

3. A day is classed as a "bad odour" day when at some stage, the odour is recorded as very heavy. The rest of the day it may have been light or non-existent.

4. Likewise a day is classed as a "light odour" day if at the most, light odours recorded.

5. No odour day is a day with no odour recorded.

6. The diary also recorded wind direction and strength. There is a clear association between odour strength in still weather and in NE winds. Wind changes can remove the odour, and in SE and NW conditions the odour may still be generated but is not noticeable in the Country Life Housing Estate.

7. The "no record" days and the lack of noticeable odour in certain winds biases the record towards less odour events being recorded.

8. There appeared to be some association of odour events with the turning of Ki Grow compost heaps.

The s.31 approval was never granted, nor was a licence in force at the time of commissioning the plant. The Christchurch Group of the Department had a policy that licence conditions were better set after the plant was operational and commissioning problems resolved. The Department did however verbally advise the Company that extra odour nuisance control equipment would be required "if odours became apparent".

Shortly after commissioning, it became evident that, in spite of the manufacturer's assurances, the plant was the source of strong odours. The Company attempted operational remedies but by March of the following year had accepted that further control equipment was needed. A soil biofilter was installed by September 1988 and after some initial deficiencies was successful in controlling odours, 13 months after the problem started.

In spite of the Department's incomplete processing of the construction applications, odour nuisance control for the rendering plant was eventually achieved. However, the failure to supply documented approvals put all reliance on the licence conditions to rectify any shortcomings in the plant.

Common practice in other regions is to use the s.31 approval as a vehicle to set the operating parameters as well as the design. Transition to a licence can then occur at commissioning without further delay. This contrasts to the lengthy time it took to grant a licence, in this case during which time the DOH relies solely on the Company's good faith to act on problems, as there are no enforceable conditions.

A Clean Air Act licence was eventually issued in September 1988. Conditions related primarily to quality criteria for offal, housekeeping or plant management, and capacity and design of the odour control equipment. The latter was to ensure that a "destruction efficiency of at least 99% of the odour is maintained at all times". There were no specific design or operating parameters given for the equipment.

The RAPCO acknowledges that it is difficult to prove compliance with this condition. Nevertheless the RAPCO was and remains satisfied that the performance of the plant with respect to odours is now within acceptable limits. The RAPCO checks the plant by "expert nose" inspection.

The RAPCO used a "wait and see" approach to the requirement for extra odour control equipment, and to the setting of licence conditions, after any commissioning problems were overcome. The argument is that the plant may otherwise have extra unnecessary odour control equipment or be burdened with inappropriate licence conditions. Against this is the argument of requiring the best practicable means of control, especially in a site close to a residential area. However the length of time that odour nuisance can persist without enforceable conditions recommends a shortening of this approach. Any potential problems with inappropriate licence conditions can be met by imposing a one year review of conditions while still providing legal conditions of operation.

The next series of odour events occurred prior to renewal of the Clean Air licence. They came from the effluent treatment system. The processes of both solid and or liquid waste treatment come under the part A licence, but the new treatment system was designed prior to the involvement of the DOH in licensing.

In the first licence, the Department had imposed only a very general condition on these processes requiring consultation prior to changes in plant or processes which might alter the air pollutants emitted. There was also the standard restatement of the general s.7 duty to operate processes so that any air pollutant emitted from the premises is rendered harmless and inoffensive.

When this licence was renewed in June 1989, the Department included a number of conditions relating to disposal of liquid and solid waste. However the RAPCO considered that the North Canterbury Regional Water Board (NCRWB) was better equipped to deal with liquid effluent problems and confined the RAPCO's role to liaison. This role of liaison continued despite the fact that the NCRWB had no authority to consider or take action on the ongoing odour problems.

The licence conditions imposed on the waste treatment system were generally complied with, but this did not lead to control of the odour problems. The RAPCO was aware of problems associated with biological towers and the potential for odours. However the difference in meat works effluent compared to domestic sewage, did not necessarily mean that the tower would give rise to odours. The RAPCO contends that remedial control measures were taken as soon as it became apparent that odours could arise in certain conditions. However odour nuisance from this source actually continued for over a year.

One condition required that the disposal system should not result in effluent ponding on the irrigation land. Though this is a useful condition the RAPCO did not need to enforce it as ponding problems were overcome when the Company gained water rights which gave it the ability to manage its irrigation system better, and revised its irrigation management regime.

Condition 26 required that

> *"If the emission of odours from the liquid and solid waste disposal systems becomes apparent the licensee after consultation with the licensing authority shall take such steps as are considered necessary to identify the source of the odours and implement control measures."*

While the Company may have legally complied and involved the DOH in discussions, this condition did not result in control of odour nuisance. In particular the condition has proved ineffective because the odour has arisen from a sequence of sources. Control of individual sources has eventually been achieved but this has not prevented odour nuisance from other sources. The RAPCO has noted that the major odour emission at the beginning of 1991 could have been prevented if the sedimented solid in the treatment plant could have been flushed to the river. This would have been unlikely to have any significant effects on the river as water flows were high, but would have been unacceptable to the Regional Council. This illustrates the difficulty of two different authorities administering separate consents when the waste treatment system may affect air or water.

Despite ongoing odour nuisance, the RAPCO has not considered prosecution. The local

policy is that if the Company recognises the deficiencies in its operation and has taken action to solve them, then the Department will assist with advice. An example of this approach is the progress of odour control in the rendering plant. Nevertheless, the threat of prosecution can act to speed up management commitment to action.

The Departmental preference for advice to enforcement is further illustrated by condition 26. In fact the generality of this condition would make successful prosecution difficult as the Company may be complying with it and implementing control measures whilst still causing odour nuisance.

Discussions between the DOH and the Company over licence conditions and odour control have not involved the public. The RAPCO has attended meetings with local authorities but the main interaction with the public has been through complaints. The RAPCO rarely gets back to the people complaining with information. The reason given by the RAPCO is lack of time, but the result is that the Department is viewed with suspicion and seen as ineffective by affected community members.[50]

Complaints received from the public are passed on to the Company at the Company's request, as this allows the Company to try and identify the source of the odour. Poor records and the absence of any monitoring or odour nuisance surveys makes it even less likely that a prosecution would be taken, or be successful in achieving a resolution to the problem.

2.2.3 Local Authority response[51]

Refer to Table 2.2 for a summary of events.

The Waimakariri District Council (WDC) was established in the local government reform of November 1989. Its predecessors in the affected area were the Kaiapoi Borough Council (KBC) and the Rangiora District Council (previously Eyre County). Powers available for action in relation to odour nuisance control are through the Town and Country Planning Act and the Health Act.

When Eyre County drew up its district scheme, it included a special industrial zone to cater for the freezing works. Protection of the works was clearly the intention of this zoning, as reflected in the following development policy.

> *"Development policies*
>
> *(iii) to protect the efficient functioning of the NCF Freezing Works and to prevent incompatible forms of development in close proximity to the freezing works."*

Because of this zone, changes in operations such as the installation of the new rendering

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50 Country Life Estate residents group, pers comm.

51 Unless otherwise noted all information in this section is from Waimakariri District Council staff, pers comm.

plant were allowed as of right and consideration of their wider effects was confined to licence requirements.

At the time of zoning, odour nuisance was infrequent, as no rendering plant had been in operation for seven years and discharge of effluent from the works was directly into the river. There was no consideration of a buffer zone except for the physical separation from the town. The district scheme had no policies relating to nuisance abatement or environmental quality.

At the review of the Kaiapoi Borough scheme in 1986, some boundary adjustments were made between the county and the town and the rural land to the southwest of the town was zoned residential. This was in accord with the wider plan for the region and the assessment of development trends and suitability for subdivision.

The scheme had no policy relating to odour or odour control. There were objectives for environmental quality and recreation, but these related to possible detractions from environmental quality such as excessive noise and unsightliness.

By provision of appropriate planning zones, the local authority has a powerful tool to use in ensuring environmental quality for the community, yet all parties concerned in this case study pointed to planning inadequacies and inappropriate siting of the subdivision (Country Life Estate) as a major factor in odour nuisance.

In the Alliance case the initial residential zoning decision was appropriate given the operations of the Company at that time. The freezing works was downwind of the area but was not the source of major or continuous odour problems. In addition, the Company planned developments which they considered would further clean up their discharges. The major difficulty arose when the operations at the plant changed and new odours resulted. Planning cannot predict such changes in operation and has little ability to deal with such changes once community and individual expectations have been set by zoning.

In this case the residential zone was already being subdivided for the Country Life Estate. The developer was in the process of selling sections.[52]

Despite the now obvious change in environmental quality that had occurred since zoning, the Council later approved further subdivision on the west side of the old main road. This was still downwind of the works and affected by the ongoing odour problems. However once the land was zoned residential, odour nuisance is not one of the grounds to either refuse or defer a subdivision. If there is an ongoing problem, this needs to be dealt with through other avenues.

Nevertheless the operation and effects of the freezing works and the Council's responsibilities for action through those other avenues was certainly the subject of much debate at Council meetings. There was an obvious tension arising from the conflicting

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52 B Currie, pers comm.

demands of the ratepayers - both residents and those dependent on the meat works.

The Councillors were very concerned that any action taken against the works would result in closure, loss of employment and the accompanying demise of the town. At the same time they were receiving numerous complaints from residents about ongoing odour degrading the quality of their lives and the attractiveness of Kaiapoi as a residential community.

Concern to keep the works operating was the predominant factor in that debate for many years. In April 1984 there was an exchange of letters between Eyre County and KBC relating to action for control of offensive smells. The KBC response was that they had no desire to be a party to any action that would in effect close the works.[53]

This stance was maintained through all the odour events until mid-1989, and prevented either Council from initiating at any stage legal actions to abate the nuisance. There seems to have been little attention to the options that the works had to abate nuisance before closure, or, that the possibility of legal action might encourage the Company to action some of those options. The latter in fact happened when the water authority, the then North Canterbury Regional Water Board, threatened a cessation notice as a consequence of non-compliance with water right conditions. The Company responded with a total overhaul of their effluent treatment system, rather than closure of the works.

Actions that were taken by Councillors and Council staff were to meet with the works management and visit the site. At the invitation of the Company, Council representatives attended the effluent task force meetings to keep Council informed of progress. Residents' complaints by letter were answered, but otherwise they were directed on to the Company. Records of verbal complaints were not kept with a subsequent inability to take legal action without instituting a formal odour nuisance survey.

When odour nuisance continued despite promises from the works management and attempts to remedy the problem, the KBC eventually recommended in June 1989 that the now Rangiora District Council (RDC) be asked to take appropriate legal action.

There is no record of the RDC response. No action took place presumably because of the approaching local body reorganisation, and possibly because of lack of documented evidence of nuisance. RDC may have also thought the problem was less urgent because of the change of effluent disposal method from full irrigation.

The new WDC and the Kaiapoi Community Board (KCB) were 'welcomed' with a number of major odour events in late 1989, early 1990. They showed an active interest in Alliance operations but gave the Company time to resolve the water right and odour issues. The Council staff met with the Company and encouraged regular reporting to Council. The Council provided submissions to water right hearings and noted that they did not consider air quality should suffer as a result of improvements in water quality.

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53 KBC letter 24 May 1984.

A year later, in early 1991, the WDC had decided to take action under the Health Act to abate nuisance and received the support of the KCB. Though aware that the works management was endeavouring to rectify the problem, the smells were such that the District Council concluded that it could not continue to ignore the numerous complaints it had received from the Kaiapoi community.[54]

As the Council had not kept full records of odour events or complaints, they were at a disadvantage with the need to gather documented evidence of the nuisance for the legal case. They had to prepare survey forms to do this *(see Fig 2.4)* which were passed to residents in March. The need for this documentation in a court case lengthens the time that the odour nuisance persists unabated while this extra information is collected. In this case the works then closed for the season, so no evidence was compiled.

2.2.4 Canterbury Regional Council response [55]

The Canterbury Regional Council (previously North Canterbury Regional Water Board) is not specifically included in the sequence of events *(see Table 2.2)* as they had no statutory powers for odour nuisance control, unless a water right discharge may cause a smell from the receiving water. In a recent piggery water-right hearing the Regional Council made it quite clear that concerns about general odour were not valid grounds for objection under their Act.

Actions they have undertaken at Kaiapoi do however have implications for the problems experienced with odour. Stringent effluent standards for the Kaiapoi River prompted the Company decision to carry out land irrigation for treated effluent. Compliance with Waimakariri River and coastal water classifications put an increased emphasis on successful land irrigation. Additional effluent treatment sometimes led to accompanying odour problems, for example with the attempt to decrease faecal coliform count in early 1991. The recent decision to upgrade the classification of the Waimakariri to a 'C' classification would force a further change of effluent treatment method on the Company.

At the time of the overloading of the land disposal system in 1988-89, the Regional Water Board threatened a cessation notice because of the extensive ponding of effluent. Odour nuisance was one of the factors that went into the consideration of this action. The notice did not proceed, but produced the desired action which was for the Company to review its situation and take action on its effluent system.

The new Resource Management Act gives responsibility for licensing of both air and water discharges to the Regional Council. The ability to consider and administer the total environmental impacts of the discharge from the plant should help to resolve similar problems in the future.

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54 File No.400-01 report of 18 February 1991.

55 Unless otherwise stated, all information in this section is from Canterbury Regional Council staff, pers comm.

File 586-04

RECORD OF ODOUR

Date: _____

Time: _____

Name: _____

Address: _____

Phone No: _____

Weather Fine Cloud Rain Fog

Wind N S E W

NE SE SW NW

Strength Light Medium Strong

Where does the complainant think the smell is coming from?

_____

_____

What is the strength of the smell?

Scale: 1 2 3 4 5 6 7 8 9 10
(low) (high)

Any particular smell apparent?

eg. Burnt grass/rotten egg/burning plastic etc

_____

_____

Additional Comments:

_____

_____

Figure 2.4: Odour survey form prepared by Waimakariri District Council

2.2.5 Company response [56]

Refer to Table 2.2 for a summarised sequence of events.

The Company acknowledges that it was surprised at the magnitude of the failure of the land disposal system, especially in the middle of the killing season and the extent of the remedial work that was found to be necessary. They assumed that they knew the plant and that it was operating well. It took some time for the now public acknowledgement that extensive work was required on the effluent system and that the frequency of on-going nuisance events was not acceptable to the community.

The odours from the rendering plant were a major problem for the first year of the plant's operation. There were also shortcomings in the plant's performance compared to the manufacturers' assurances in a number of other areas - liquid effluent quality and quantity and operating capacity. The Company considered legal action against the contractors for their failure to meet design criteria.

Though the Company had no documented approvals for the construction of the plant, they complied with the verbal agreements to remedy any odour nuisance. Once agreement had been reached on a control method it took a further six months to design and install and commission the soil biofilter. Since then Alliance has informed the DOH of any problems in operation at the plant for example a break in the ducting filter, and have fixed them quickly.

When the land effluent disposal system had totally overloaded after one season's operation, the Company brought together a task force of technical consultants to look at the system. They knew that poor performance of the rendering plant was a major factor. The effluent volume of very concentrated stickwater was twice that expected and could not be properly processed by the effluent treatment plant. Also the area of land was undersized for the volume of effluent and the climatic conditions, and the amount of drainage installed was inadequate.

The task force rapidly concluded that they needed to assess the whole of the waste management system. There was potential to markedly improve the system in relation to both liquid discharge and potential odour.

The general approach was to separate waste streams such as solid waste from the yards, and by so doing reduce the loading of the effluent treatment system. Water usage was decreased by a third. Putting the recommendations into effect also removed the source of some odours for example open offal pits and obsolete drains, and modified the operation of some potentially odorous systems, for example composting, treatment tanks, sludge tanks and the malfunctioning irrigation system.

The information from the task force was also used to help gain water rights for a discharge to the Courtney Stream and later Waimakariri River. This reduced the load on the irrigated area while it was being rehabilitated and gave flexibility to future

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[56] Unless otherwise stated, all information in this section is from the Alliance Group Kaiapoi Plant management, pers comm.

operations to stop overloading. The Company also leased more land and were continuing to investigate further areas of land to add to their irrigated area.

Many of the task force recommendations were actioned by late 1989. They resulted in general control of odours from the identified sources. Unfortunately, some recommendations led to further odour problems. A major problem resulted from the recommissioning of the biological tower for secondary treatment of effluent. This utilises the growth of a fine film of microbes on plastic media to break down wastes. Microbial growth was excellent and the result was a very good effluent quality, but the death and decay of large quantities of the microbes lead to a further odour problem. The capture and treatment of odour from the tower did not occur for another year.

In a complex operation such as the freezing works it was difficult to pinpoint the source of odours accurately. To help track individual odours to the various sources the Company at the end of 1989 had instituted a monitoring scheme with local residents. Even so, for most events it was difficult to pinpoint the source of the odour particularly in variable wind conditions.

If possible the problems identified were remedied permanently for example when stickwater from the rendering plant was left in the tanks the design of the floor of the tanks was amended to a slope to aid drainage. However it took longer to find and install the appropriate remedies for larger scale problems such as the biological tower and changes in operating parameters were usually tried first.

The monitoring scheme was also intended to serve a second function - that of being seen to take residents' concerns seriously and to action complaints. Company representatives often visited the area affected by odours to help to identify the source, and had phone contact with residents.

However, as odour persisted, albeit from different sources, affected residents did not see that their information or complaints were taken seriously. Company response to telephone complaints and the variety of events that have caused odours led to frustration and a perception that the Company were excusing their operations without solving problems. A councillor commented that "each time he rang the Company he received a different excuse, involving, invariably plant", and "ratepayers who contacted the Company received different advice regarding their comments".[57]

Though the Company met with the local authorities, direct communication with resident groups was infrequent. The Company had written a letter to residents in May 1989, but there was no regular news update by newsletter for example. Company management met with residents in October 1990 just prior to the biological tower cover being installed, explained their position and reassured residents that odour was shortly to be a thing of the past. Unfortunately the odour event of early 1991 completely undermined the positive response from residents to this attempt to better community relations.

There have been comments made to the investigating team that the Company is more

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57 KCB minutes, 12 March 1990.

concerned to meet water right conditions than to prevent odour nuisance. The statutory power of the Water and Soil Act and the attitude of the authority concerned are reasons given for this stance. Within the confines of this investigation it is impossible to ascertain the truth of these comments.

The Company ascribe a lot of their problems, with the benefit of hindsight, to the lack of tried and proven technology and to poor advice and information from consultants and manufacturers. The point has been made that the Company has control over which advice it takes and that it may be the mixing and matching of advice which has lead to unsatisfactory results. Without a detailed assessment of the commercial information used by the Company it is impossible to judge on this matter. The Company are certainly willing to use groups such as the Meat Industry Research Institute of New Zealand (MIRINZ) and DSIR and have good working relationships with them.

The Company also ascribe their odour problems to inappropriate subdivision and raised expectations of the local residents. They now recognise the need to be involved in submissions to the planning process. While it is undoubtedly true that freezing works have always been a source of odour and some operating practices such as fires burning in open offal pits would have certainly led to very bad odours, some of the sources of odour in this case are from new operations. Moreover, increased community expectations of improved environmental quality means that there should be determined efforts to abate a continuing nuisance.

The Company have certainly taken steps to meet increased environmental standards for water quality. They planned a full chemical treatment plant but even with this treatment were concerned that the effluent would not comply with standards arising from the latest decision by CRC to increase classification in the Waimakariri River to a 'C' classification. Effluent disposal problems were a consideration in the decision to close the plant.

Comments were made to the investigating team by those outside the works that the Company's problems were due to "too little action, too late" or to the works being pushed past its operating capacity particularly in relationship to the processing of offal and skins from other plants. The state of effluent treatment at the 1989 review signified that what were becoming common industry practices for example separation of waste streams, had not been picked up by the Company. Putting the recommendations of the task force into effect with the general clean up of the effluent system was a costly business.

In relation to whether the works is being pushed past its capacity, the existence of plant of different ages makes it difficult to judge whether mechanical failure or maintenance problems are unduly high. It is true that if the rendering plant exceeds its operational capacity, this can give rise to odours. The Company states however that though they take offal from the Sockburn Plant, the rendering plant is able to take all product during production at its capacity of 12 tonnes per hour.

Regarding the effluent treatment system, there is some association between running three chains and high summer temperatures with odour from the biological tower. There is not a clear correlation however, and the variability of effluent at the works makes such

a straight correlation unlikely. Without running extensive tests it is not possible to show if such a correlation exists.

Average daily kill numbers have increased from a maximum of 5,400/day in 1975 to a maximum of 9,600/day from 1987. The effluent plant has been altered considerably over this time both in operation and design. As the daily kill increased, the capacity of the effluent plant increased accordingly. The Company state that the effluent plant design capacities will handle the kill numbers easily provided that water usage is controlled around the works.

Much more detailed investigations than are possible in the time frame of this investigation would be required to establish whether over-capacity was a source of the problem.

The Company have now, as part of industry restructuring, closed the killing chains at the plant. The rendering plant and the fellmongery will continue to operate. This will be on a limited basis and the Company expect to be able to easily meet discharge criteria. Present licences and permits will remain and give odour control conditions.

2.2.6 Community response [58]

Refer to Table 2.2 for a summarised sequence of events.

The predominant response the investigating team found in interviews with residents from the community group in the Country Life Estate was anger and intense frustration at the impairment of their quality of life, and the inability to get action which would *solve* the problem. They consider that "this stench represents a definite health hazard, due to the high stress factor it places on those people who are exposed to it on a regular basis, for prolonged periods of time."[59]

These residents represent the ratepayers in the subdivision. They consider that of 75-80 households, 30 - 40 complain but 100% agree that odours detract from the quality of life. Council records also show and staff confirm that odours reached complaint level in other areas of Kaiapoi Borough, particularly in the first year of operation of the rendering plant.

After living with severe odour problems for three and a half years, the residents have no confidence in the ability of the local authority or the Department of Health. They comment that there is no authority charged to make an independent assessment to control the problems. They believe that the Council has shown itself to be more concerned with protection of the works than protection of the public. The DOH is seen to be on the Company's side, willing to operate as a consultant on odour control, regardless of the length of time it takes to control the nuisance.

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58 Unless otherwise noted, all information in this section is from the Country Life Estate Residents' Group, pers comm.

59 C Paterson, letter to DOH, 26 February 1991.

The residents have concluded that the legislation under which these authorities act has "no teeth". Without the political will to act, there is no statutory obligation on the authority. Licences and conditions have not solved the problems. They believe that even if an agency were to take court action, the Company would use the system and appeal any decision which was unfavourable.

The lack of response from the agencies has added to the residents' frustration. The ability to attend Council meetings is seen as relatively pointless as there are no speaking rights for residents present.

There is now a complete lack of trust in the Company and a perception that the Company "have done nothing", "haven't spent the dollars on the problem" and "always have an excuse". Two major factors have contributed to this.

- The first factor was the Company's lack of communication and involvement with residents. Residents did not consider that the inclusion of two Council members in the task force was representative of their interests, or that the task force was independent or impartial.

Task force meetings were kept confidential for commercial and technical reasons. In other areas, affected residents have been involved in working parties that address technical issues as, for example, the sewage works in s.2.3.3, and this has proved useful to all concerned. It allows direct feedback to other interested members of the community on actions that have been taken to address the problems.

The second factor was the string of odour events that have occurred which, though they were attributed to different causes, resulted in an ongoing odour nuisance problem. As an example of this, response to the Alliance management presentation at the October 1990 residents' meeting was good. Residents thought once again that "this time they were really going to get it sorted out". However once there were other bad odour events after this, they saw the whole attempt as a sham.

- Authorities tend to rely on the number and frequency of complaints from residents as the only indicator of community feeling. This is not an adequate measure by itself. The team were told that individuals stop complaining because they do not want to be cast as troublemakers or mentally unstable. Also if there is no response to complaints or the odour nuisance recurs, it is not worthwhile to continue. "I no longer bother contacting them" was a common response.

- The residents are also caught between a desire to get action and a desire to avoid excess publicity which would further devalue their area.

House prices are relatively lower than normal in the Country Life Estate area and real estate agents find them difficult to sell. The standard of housing has changed to a less upmarket building than when the estate was first established.[60]

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[60] D Jose, R Sampson, B Currie, pers comm.

These events have resulted in a hardening of opinion with the community. From initially wanting the odour to go away, some of the residents now believe the only answer is for the community to go away. They cite the closure of the woollen mills ten years ago as an indication that the town would survive the plant's closure.

2.2.7 Discussion

The Alliance Kaiapoi Plant case study illustrates the effect that a series of technological changes can have on production of odour, and consequent ongoing odour nuisance to the neighbouring community. Attempts to control and remedy odour were made but often led to new sources of odour and there was a see-sawing of environmental impacts between air and water discharges.

Resource consents

The number of different authorities considering different environmental aspects of the works and the opportunity to pass responsibility to a group (Canterbury Regional Council (CRC)) that has no authority to act, shows a deficiency in the system. Better control of all environmental operations will be achieved if the new regional councils take up the opportunities for integrated consents for air and water discharges which are allowed for in the new Resource Management Act and provide for joint hearings with land use consents. District councils too can control adverse effects of land use under this Act.

The use of a short-term review clause written into new resource consents will allow a reassessment of the performance of the plant with reference to its discharges. If required, the authority then has the ability to modify conditions and the Company to change equipment. As the technology now exists to control odour at rendering plants and biological towers, stringent conditions on odour should apply. The only exception could be very isolated areas where there is no potential for odour nuisance, but even here controls are required so that there is an ability to change the condition if the area becomes more densely populated.

Public lack of confidence

A public lack of trust in the Company and the authorities has been very noticeable in this case, and has exacerbated the frustration of residents. The public do not see the authorities or the legal system helping them. The ability for any person to obtain an enforcement order through s.314 of the Resource Management Act to abate environmental effects may be a useful tool for communities in the future. However this avenue may be restricted by the question of cost.

Better liaison between the Company and the public could have helped as the long process of attempting odour control continued. There needs to be involvement of interested parties even in technical groups, in order for the community to understand and support the actions being taken. There are usually some members of a community with the desire and background to understand technical information and their involvement increases the credibility of Company or regulator actions. Strictly commercial information on costs can be kept confidential to the Company, but the range of options

can be fully discussed. Some form of liaison group is best coordinated by a party that has not been involved, such as the CRC, and should report publicly.

Complaints information systems

The frustration of affected residents in living with an odour problem is increased by a perception that the responsible authority is not providing the information they want. Other air pollution regions have managed systems where those who complain get a response to their query, unless the event has involved hundreds. While this can be difficult and time-consuming in an ongoing case like Kaiapoi, key contact people in the community can be used as part of a telephone link. Unusual levels of complaint are investigated and feedback also helps the authority to ascertain whether the odour has been controlled successively. In the event of ongoing problems the record of complaints and events is useful for negotiating purposes or in the event that the authority wants to take legal action.

The public will have greater confidence in the ability of the authority to alleviate odour problems if the authorities dealing with the complaints from the public have a practice of recording all complaints and providing, where possible, feedback on odour events to those concerned. In the final analysis, however, if the odours are not alleviated, such confidence will be eroded.

The lack of an independent regulator has been noted as a problem in terms of getting action on odour problems. The Council will no longer be as involved in the plant processes as is the case of the DOH, but will still have the need for expertise to set conditions and consents and assess Company evidence. The performance of the Resource Management Act, with respect to the ability to take successful actions to abate nuisance, is as yet unproven.

The closure of the killing chains at the plant substantially removes the possibility of odour from the effluent treatment system. The rendering plant and fellmongery will remain in operation, but provided that existing practices and control equipment are maintained, no problems are envisaged. If a malfunction does occur, the regulator, which will now be the Canterbury Regional Council should act promptly to inform the residents of the circumstances.

2.3 Other issues investigated

During 1990-91, six odour nuisance issues were reported to the Parliamentary Commissioner for the Environment. Resource constraints meant that only two could be dealt with as in-depth case studies. The remaining four are reported in summary below.

Sections 2.3.1 and 2.3.2 deal with problems relating to existing land uses, whereas sections 2.3.3 and 2.3.4 relate to problems associated with anticipated odour nuisance.

2.3.1 Papanui Farm piggeries, Whenuapai[61]

This issue was brought to the attention of the Commissioner in June 1990 by the Whenuapai Pig Action Group. Their concern was that the piggery was operating without a water right and in violation of local bylaws, and creating odour nuisance and pollution of the local waterway.

Tardiness in the then Regional Water Board response meant that the piggery was operating without a water right between March 1988 and April 1991. Evidence gathered by the Waitakere City Council in June 1990 substantiated residents' complaints that the land application of effluent was in excess of the capacity of the local soils and that actionable nuisance under the Health Act was occurring.[62] The water right now granted by the Auckland Regional Council requires improvements to effluent management and the District Council has refused to continue a grant of dispensation from the bylaw in relation to separation distances of effluent ponds from the boundary.

However, it appears that even if the farm can meet these new requirements, the odour nuisance will not necessarily be abated. The Code of Practice for pig farming published by the NZ Pork Industry Board recommends a buffer zone of 2 kms from the nearest residential zone for new establishments.[63] The bylaw only requires a separation of 50 metres.

Changes in scale of land use

This case appears to be one of a piggery expanding in scale until too large to dispose of its effluent on-site in a nuisance-free manner. Prior to 1988 the piggery had a water right restriction of 50 sows and progeny (around 500 pigs) and residents did not lodge odour nuisance complaints, but now the proprietor is attempting to dispose of effluent from 1,250 pigs on the same small holding. While it is true that the adjacent rural residential area also increased in population over the same period, some of the complaining residents have been there over 20 years. They would still have grounds to complain once the odour nuisance started regardless of the fact that they had been joined by new neighbours in the interim.

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61 Information has been obtained from M Simpson and E Donald (Waitakere District Council), C. Hatton (Auckland Regional Council), N M Cavaney (Auckland Area Health Board), and R B Green, J Keeting et al. (Whenuapai Pig Action Group).

62 Memo for Land Use Planning and Environmental Management Committee meeting of 15/6/90, Waitakere District Council.

63 NZ Pork Industry Board 1990. Appendices, p.8.

Staff from both the District Council and Area Health Board have made comments that suggest that odour nuisance would be difficult to prove as it is within a rural area. This attitude is of concern, as it seems to confuse the normal odours associated with grazing animals with the high intensity of odours and effluent associated with over 1,000 pigs permanently housed in one spot. These are intense odours which no one should be forced to endure at close quarters regardless of rural or urban residency. A double standard of protection from odour nuisance has also been reported to the Commissioner in relation to a piggery housing over 3,000 pigs in South Canterbury.[64]

Regional Council staff in both Auckland and Canterbury have noted that most applications for water rights from piggeries attract strong local objection, and that:

> *"Piggeries tend to be situated on the urban fringe, are often on small sites with marginal land available for waste disposal and have a disproportionately high management failure rate when compared to other industries."*[65]

Odours released from land application of piggery effluent could not be dealt with under the Water and Soil Conservation Act, but under the Resource Management Act resource consents may deal with land, air and water impacts together if the public authority so directs.

In order to avoid creating odour nuisance for neighbours, controls are required to prevent piggeries expanding in intensity beyond the capacity of available technology to control odour and/or land area to process effluent adequately. Where odour nuisance is created by existing land application of piggery effluent or proposed expansion is likely to increase odour nuisance potential, alternative methods of effluent processing or controls on the scale of factory farming should be required by consent-granting authorities.

Conversion of effluent to biogas is a particularly promising option which can convert a source of nuisance into a supplement to the energy requirements of the farm. Technology is already available for this option,[66] although expensive, and effort is required to disseminate this information to pig farmers and consent authorities.

Conclusion

The ability of land planning mechanisms to provide for expansion of operations and changes in technology is limited and therefore statutory controls to provide for controls of the effects of these operations is necessary. A review clause in resource consents will also provide for changing circumstances. The drawing of environmental management under one statute may be an advantage in the future provided that all are considered together. Discharge permits for contaminants from factory farms will be required in three years.

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64 Letter to PCE of 31/5/91 from M Taggart, Cust.

65 Letter to PCE of 26 June 1990 from C Hatton, ARC.

66 NZ Pork Industry Board, 1990, p.20.

2.3.2 Manukau Sewage Purification Works, Auckland [67]

The issue of odour nuisance in relation to Auckland's sewage treatment plant in Mangere first came to the attention of the Commissioner in November 1989, in the context of the Independent Review Panel evaluating Stage 2 of the Auckland Area Sewerage Study. The issue was subsequently brought to the attention of the odour nuisance investigation team by the Mangere Bridge Residents and Ratepayers Association in April 1991.

The Manukau Sewage Purification Works (MSPW) is located adjacent to residential areas and has been the source of odour nuisance for many years. A Commission of Inquiry addressed the problems in 1965, [68] and a petition from 1,180 residents to the Manukau City Council in 1990[69] bears witness to the fact that odour nuisance continues. There will be little argument that strong odours resembling decomposing human excrement or anaerobic breakdown products should not have to be tolerated in a residential area.

The Independent Review Panel report noted that:

> *"The lack of a buffer zone at the present time is one of the most difficult aspects of this plant."*

With houses as close neighbours to the sewage treatment plant, odour nuisance is very likely and options for odour control are limited. Sewage treatment is not listed in part A of the Clean Air Act, so the RAPCO has no control over its operation.

Sources of odour from the plant are numerous, but among the worst is odour caused by malfunction of the oxidation ponds which, as living systems, are very sensitive to loadings. If too little oxygen is present, anaerobic hydrogen sulphide odours will arise, but if too well oxygenated, plagues of midges will result. Plant management seek to minimise fluctuations in loading, but have a limited ability to do so with high diurnal and seasonal fluctuations in flow and stormwater events.

Another major source of objectionable odour are the fixed growth reactors (FGR). If the oxidation ponds fail to function properly, much of Auckland can smell the sewage works, but if the FGRs malfunction, principally local residents suffer. Management thus seeks to avoid pond crashes, at the expense of the FGRs if necessary. Even the odour from the algae and micro-organisms in a 'healthy' normally operating FGR is recognised by management as "not a normal residential smell".

Odour from the FGRs can be largely controlled through covering them and extracting the gases through a soil filter. However, initial consultants' advice meant that original

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[67] Unless otherwise noted, information obtained from P Orr, R Lawty (Manukau Sewage Purification Works) and M Wierda, R Baldwin, B Kirk (Mangere Bridge Residents and Ratepayers Assn.).

[68] Commission to Inquire into Alleged Nuisances in Auckland Metropolitan Drainage District, 1965, AJHR H31A.

[69] J H Brinkman, Mangere Bridge Residents and Ratepayers Assn. to W Cole, Auckland Area Sewerage Study, 15 February 1990. Organisers estimated that 98% of Mangere Bridge residents supported the petition.

designs did not include covers, and experimentation to control odours went on for six years before covers were ordered. Now, eight years after commissioning of the FGRs, installation of covers has only recently been fully completed.

Residents recognise the limited options for odour control at the existing plant, and argue that the optimal solution is full implementation of available odour control measures, reducing the loading at the MSPW, separating the stormwater system, moving toward satellite treatment stations, and adequate resourcing of staff.

Creation of satellite treatment plants will limit the sewage to be treated at MSPW to within its capacity. Avoidance of the particular odour problems that arise from sewage that has travelled a long distance and has become highly odorous through partial decomposition before reaching the plant, will not be entirely eliminated at Mangere but will be reduced markedly. The 'not in my backyard' syndrome cuts both ways; no one will welcome a new satellite sewage treatment plant in their neighbourhood, but also the people of Mangere Bridge should not have to suffer the obnoxious impacts from the processing of everyone else's sewage as well as their own.

Learning from past experience at the MSPW as well as at urban sewage works elsewhere in New Zealand, could lead to the development of national guidelines for adequate buffer zones to be established at satellite treatment plants. Experience in odour control devices should be utilised for design and installation of new plants. The Independent Review Panel, looking at Auckland's sewage treatment options, recommended;

> *"If satellite or district plants are chosen as long term options, then 'good neighbour' plants should be investigated"*, and;
>
> *"A future treatment strategy for the MSPW should be developed and should include hydraulic capacity as a limiting factor."*[70]

Both residents and plant management identified lack of political will and lack of adequate resources for both the odour nuisance control delays of the past, and for the reticence to seriously address MSPW capacity and the need for satellite plants. The latter was addressed as part of the Auckland Area Sewage Study of 1989 and the ARC decided among other things to limit the treatment plant to a population of 865,000 or less and establish satellite plants to accommodate urban growth. They also provide for discharge of treated effluent at the Manukau Heads, stormwater separation from sewage and amendment of trade and waste bylaws.[71]

The people of Mangere Bridge have borne adverse impacts from sewage treatment for a majority of the population and industry of Auckland for many years now. Since the ARC has made a decision to keep MSPW as the main treatment plant for the region, ARC has an obligation to systematically eliminate the sources of odour that can be eliminated.

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70 PCE 1990, p.22.

71 Auckland Area Sewerage Study, Stage II, Auckland Regional Council, September 1990.

Conclusion

Once again, the intensity and type of operation of the MSPW has changed over time and the residential area is too close to avoid odour nuisance from the plant. Lack of political will to allocate funds has been noted as a problem in this case.

The inclusion of 'waste management' as an industrial or trade premises requiring a discharge permit for air contaminants in the new Resource Management Act will help this situation. Resource allocation should be improved as management will have a statutory duty to uphold. Separation of service function and regulatory function will also help ensure discharge permit conditions are enforced. For new installations, management will be required to consider and provide for odour control in the design stage.

2.3.3 Five Star Beef Ltd proposed feedlot, Ashburton [72]

Five Star Beef Ltd has proposed to operate a beef feedlot for 15,000 head of cattle some 15 km southeast of Ashburton at Wakanui. A feedlot at such a scale has never before been established in New Zealand.

The land use falls under the district scheme definition of factory farming, and was considered by the Ashburton District Council as a conditional use. Joint hearings were held with the Canterbury Regional Council on planning and water rights consents. Both consents have been approved, but neither with conditions specifically relating to odour. There are, however, a number of conditions intended to prevent such problems arising.

The water right consent procedures under the Water and Soil Conservation Act did not allow direct consideration of odour nuisance control from land-based impacts, and the Canterbury Regional Council's decision therefore contained no recommendations relating to odour nuisance control. The Council would, however, have been aware of design and operation features in the feedlot system to avoid odour problems. The Council has set a number of conditions to protect water resources, and will require its staff to hold annual meetings between the Company and objectors to discuss water right monitoring and compliance.

The Ashburton District Council had greater scope to consider odour nuisance, they were satisfied with the evidence presented on the day that the proponents had adequately designed the feedlot and that siting of the feedlot was a reasonable distance from the nearest dwelling. The council based its decision in part on a visit to a feedlot at Hinds from which they found the odour "not oppressive", and reference to an independent consultants' survey showing that residents within 1.65 km of the Hinds feedlot were unable to detect any odour.[73] However, the beef feedlot at Hinds carries some 1,200 head of cattle, and the Wakanui site considerably more at 15,000.[74] As the Council

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[72] Unless otherwise noted, information has been obtained from M Singleton (Ashburton District Council), W Freeman (Canterbury Regional Council), D Pullen (Department of Health), and A Shepherd (Ministry for the Environment).

[73] Ashburton District Council, findings from hearing of 7/8/90 on Five Star Beef application, p.3.

[74] Tipler 1990, pp. 1, 31.

was aware of the potential odour nuisance from overstocking in respect of design capacity, they imposed a condition limiting the total numbers of stock, plus a density measure.

The Canterbury Area Health Board did not object to the applications but did warn that odour nuisance was a potential problem:

> *"In our opinion, the sheer size of the proposed operation combined with a very high concentration of cattle within a relatively confined area, the continual disturbance of faecal material, the stockpiling of manure, the use of retention ponds and the spray irrigation of liquid effluent over adjoining land, will generate smells and possibly odour complaints.*
> *It is acknowledged that smell is subjective, however, once the operation is established, control of any complaints may be a problem."*[75]

As beef feedlots are not covered in the Second Schedule Part A of the Clean Air Act, the Regional Air Pollution Control Officer was not involved. He did however present evidence at the second water right hearing.

In addition to potential odour nuisance, objectors were also concerned about effects of effluent and leachate on groundwater, streams, and the coast, and impacts from dust, disease risk, noise and traffic.

The Company has negotiated a 'Heads of Agreement' document with objectors and local residents. In exchange for objectors to the water right accepting the Regional Council decision, the Company agrees to meet with a designated liaison group annually with regard to water rights, keep the group advised of correspondence and minutes relating to water rights, meet "from time to time when it is deemed necessary to discuss specific issues", and to:

> *"...consider environmental related matters raised by the Group, and to seek to reach solutions, provided such are within the Company's jurisdiction, are possible, and practicable".* [76]

The document provides that objectors and residents will maintain a duly representative liaison group of three members, two representing water right objectors and one the nearby community of Hakatere. This liaison group is to be the preferred avenue of communication with the Company, although individuals do not waive their right to get in touch with the Company directly if there is need to do so.

The Commissioner has congratulated Five Star Beef Ltd. for the Heads of Agreement reached between the Company and the Joint Liaison Group, noting:

> *"This formal recognition of community rights to environmental information which may affect them is a trend-setter in New Zealand community/industry*

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75 Letter from R S Parr, principal Health Protection Officer, to the Ashburton District Council, 17 May 1990, p.2.

76 Heads of Agreement between Five Star Beef Ltd. and the Joint Liaison Group, clause 2, para 3.

liaison. I have quoted it as a good example of what is achievable in conflict resolution when there is good will on both sides."[77]

Although an open liaison approach is extremely valuable, it does not replace the value of preventative measures. As has been shown in earlier sections of this chapter, if an odorous activity gets established and produces nuisance odours as a regular feature of its operation, it can be extremely difficult to exercise controls under statute.

While a good neighbour approach is to be encouraged it does not negate the need for adequate controls on consents and compliance with these. Whether the Resource Management Act will make control of established industries easier to obtain can only be seen in practice.

Conclusion

The new Act will require discharge permits from factory farms in three years' time. Councils will need to have or obtain the expertise to be able to assess the environmental effects of the discharge, the conditions that should be imposed, and the industry evidence. Joint consent hearings will help ensure all concerns are addressed in the appropriate forum.

The open liaison approach adopted and evidenced by the Head of Agreement is a good example of the advantages of involvement of concerned communities.

2.3.4 Te Poi Skin Processors Ltd, Matamata [78]

This issue was brought to the attention of the Commissioner in December 1990 by the MP for Matamata on behalf of Matamata area residents. Residents were concerned that the proposed skin processing plant would cause odour and water pollution problems which would not be adequately controlled by the District and Regional Councils.

The Matamata Piako District Council considers that the plant can be dealt with adequately by existing district scheme provisions. The only condition on the planning consents is a general requirement to ensure that no odours are detected at the site boundary. No buffer zone has been allowed for.

The Auckland Region RAPCO considers that the plant is licensable under Part A of the Second Schedule to the Clean Air Act because the proposal includes fellmongery processes involving the use of sulphides. To date the Company has not applied for Clean Air Act permission to establish (s.31). The RAPCO advised consultants for the Company of the need for this approval but has no means to require an application, and can only take enforcement action if the plant actually begins construction without a s. 31 approval or begins operating without a licence. By then, the ability to set licence

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77 Letter from PCE to Five Star Beef Ltd, 7 June 1991.

78 Unless otherwise noted, information has been obtained from K Rolfe (RAPCO, Department of Health), R J Matthews (Waikato Regional Council), A T T Brown and D F Donovan (Matamata residents).

conditions requiring odour control as an integral part of plant design and operation will be limited.

Under the Resource Management Act (which repeals the Clean Air Act), the Company will require a resource consent to discharge contaminants to air unless a rule in a regional plan, regulations, or existing resource consents allow that discharge. Existing land use and water rights consents may be considered to meet the need for resource consents allowing discharge of air contaminants, so an additional consent may not be considered necessary.

The Company also proposed land disposal of effluent in a location very close to a local school. Although water rights were applied for to regulate the land disposal, once again the Water and Soil Conservation Act could not put on any controls that would limit any odour nuisance arising from the land disposal of effluent.

The Commissioner has recommended to the Waikato Regional Council that the community be actively involved in monitoring the environmental impacts from the plant. While this would relate principally to water right conditions, under the Resource Management Act the Regional Council is also responsible for effects of discharges to air.

Since the issue was raised with the Commissioner, the Minister for the Environment has intervened and made it clear that the Company required a licence under the Clean Air Act. The Minister in giving this advice stated he believed the new Resource Management legislation would greatly assist the processing of applications such as the Te Poi Skin Processors. The Regional Council would have the responsibility to control both odours and discharges to water.

The Company has now decided to construct the plant at Te Aroha, and planning approval has been granted. There has been an application for a new water right to irrigate on a closer location, but the Company is retaining the present right and may transport the effluent. No application for a Clean Air approval has yet been received.

Conclusion

The differential timing of applications for licences and approvals has been a matter of concern for local residents in this case. This concern will be better met with the provisions of the Resource Management Act, particularly the requirement for joint hearings of all related consents and the regional responsibility for air and water pollution control. The joint planning/water right hearing organised at Te Poi was appreciated by residents, but they were concerned that the details of odour control were not addressed.

3.0 CAPABILITY OF SYSTEM TO PROTECT THE ENVIRONMENT

There are three basic groups of stakeholders whose rights and expectations must be reconciled in relation to odour nuisance conflicts. These are:

* the private property owner who has undertaken a (usually commercial) activity on their property which causes odour nuisance to neighbours;

* the neighbouring residents/property holders who seek an environment free from odour nuisance; and,

* the wider community who derive some benefit from the commercial activity, and who would generally wish to see environmental quality maintained and the neighbouring residents treated fairly.

Both common law and legislation have been set up to mediate between these stakeholders. There is a public expectation that the outcome should be a fair and equitable. However, the capability of the environmental management system to deliver such an outcome will depend on the structure and interpretation of legislation, and the ability of stakeholders to fully participate in resolving problems.

3.1 Granting of rights and obligations by legislation

Section 1.4 outlined the legal authorities granted by legislation, both statute and common law.

This section contains an analysis of this legislation to identify deficiencies and provide for recommendations.

Clean Air Act 1972

The title of this Act suggests that it was enacted in order to ensure communities in New Zealand could enjoy clean air. However the purpose of the Act refers to "abatement of pollution" which encompasses the concepts of 'diminish', 'do away with' and 'mitigate'.[1] This does not include the notion of 'prevention'.

In addition, there are no duties in the Act placed on any individual or organisation to guarantee clean air or a minimum standard of air quality.

The duty placed on occupiers of premises (s.7) relates to applying the 'best practicable means' to *minimise* the emission of air pollutants, and to render any air pollutant emitted 'harmless and inoffensive'. However, 'best practicable means' (BPM) is an extremely flexible and relative measure, which may encompass financial and technological as well as environmental criteria, in deciding what is the BPM for any particular situation.

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1 The Concise Oxford Dictionary, 1976.

The only grounds for refusal of Clean Air licences is protection of public health or contravention of the Town and Country Planning Act 1977 (s. 29). This suggests that prevention of odour nuisance is to be achieved through town planning while Clean Air licence measures the act to control odour.

Health Act 1956

The general duties relating to odour nuisance in this Act also refer to abatement. The obligation rests with the local authorities and powers to prohibit recurrence lie with the Courts (s.33).

The Act does not at any time mention 'prevention' of nuisance; a nuisance has to occur before it can be 'abated'. Additionally, the possibility of abating nuisance from "any trade, business, manufacture or other undertaking" once it has occurred (s.29(1)) has been severely limited by the High Court decision in *Meadow Mushrooms v Paparua County Council.*[2]

Town and Country Planning Act 1977

This Act requires that district schemes make provision for matters which include the avoidance or reduction of nuisance caused by the emission of odour (Second Schedule), but the strength of this measure is diluted by the many other matters under consideration by councils in making district schemes. It is further diluted by s.90, which guarantees continuation of existing uses regardless of their impact on the environment.

There is also a duty on councils to keep 'objectionable elements' in connection with certain uses of land to a minimum, with an associated power to serve notice on the offender. In practice use of this power means that the source of 'objectionable elements' must be closed down completely (seen as a draconian measure) or the council has to have sufficient technical expertise to specify improved processes or control equipment.

Furthermore, this power is not available for any air pollutant emitted from premises defined under part A of the Clean Air Act, or any discharge authorised under the Water and Soil Conservation Act.

Resource Management Act 1991

Under the Resource Management Act, activities are permitted unless explicitly restricted. Restrictions are imposed because of potential or actual adverse impacts on the environment, rather than because of the existence of the activity itself. Odours are quite clearly an adverse effect on the environment as defined, and would be controlled through a combination of land planning and discharge permits.

Territorial authorities have the function of control of adverse effects relating to the use of land, executed through district plans and land use consents. With the permissive

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[2] See section 2.1.2.

presumption for use of land it is imperative that potential for odours is considered when establishing plans and defining rules to contain the effects of activities *(see section 3.3)*.

The only restriction on discharge of contaminants into air is from "industrial or trade premises", unless allowed by a rule in a regional plan, a resource consent, or a regulation. Discharge of contaminants to air from all other sources is allowed as of right unless specifically contravening a rule in a plan and a resource consent has not been issued (s.15).

The permissive attitude to discharges to air is in contrast to the duties and restrictions relating to water. The discharge of *any* contaminant into water is controlled and discharges are prohibited that would compromise minimum water quality standards (s.107). There is also a restriction on the ability of councils to allow discharges to water as permitted activities if they will result in certain adverse effects (s.70).

Air like water is a common good and a medium within which contaminants are dispersed - unlike land where private property rights and duties are assumed. Discharges into air should be treated in a similar way to discharges into water.

The definition of 'trade and industrial' processes in the last draft of the Bill before enactment did not include premises that have been found to cause significant odour nuisance, such as sewage works, large-scale composting operations and factory farming. As councils may not be able to foresee the need for control of all such activities in advance in their plans, they should be provided with the ability to control adverse effects through discharge permits. This recommendation was accepted and the obligation in the Act now covers waste management, organic composting operations and factory farming.

However, as referred to in the discussion of the Meadow Mushrooms case, there is a delay in imposing this obligation (s.418). While this is supported for processes which are not at present subject to licensing procedures, those premises which are already subject to environmental controls under existing legislation should not be exempted.

With regard to discharges from other sources, the council can provide a rule in a plan which requires a discharge permit, or prohibits certain activities. District plans can likewise provide for criteria or standards which must be met by activities in the district. However, to take these actions, councils would require considerable technical expertise to justify placing such a control and foreknowledge of likely environmental effects as well as future technologies that would be of concern. Their obligations under s.32, to justify all methods used, mitigate against the imposition of rules unless they have full technical information. Placing of prohibitions on activities solely as an odour control measure is not likely in most instances, and these are the only grounds specifically stated in the Act for refusal of discharge consents for air contaminants.

Given this, the lack of any statement of minimum air quality standards is of concern. Although the Act introduces the concept of *prevention* by providing that adverse effects be *'avoided'* (s. 4(2)(c)), rather than relying solely on 'abatement' as in the Clean Air and Health Acts, minimum standards are required to provide guidance to councils and certainty to industry. Basic guidance is required on effects in air which should be

look up
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avoided, as is provided for water. This could be achieved through a provision in regional plans to state what effect should not occur as a result of discharging contaminants to air.

A general duty to avoid, remedy or mitigate adverse effects is provided through s.17. While not enforceable of itself, it substantiates the powers to issue enforcement orders and abatement notices under Part XII. These powers can be used on existing activities and therefore can be used to remedy unforeseen effects. These powers are, however, in the nature of an enforcement action which are generally seen as a final resort. Difficulties associated with taking such actions are discussed in section 3.7.

3.2 Measurement of odours

Setting air quality standards for odour, or emission limits for odorous compounds, and enforcing compliance with these limits, presupposes an ability to measure odour. Yet the measurement and analysis of odour is very difficult for a number of reasons.

Technically, measurement is difficult as the dose of odour to which an individual is subjected changes with a number of factors: the compounds in the emission, distance from the source, the chemical stability of the compounds, weather conditions (especially wind) and the surrounding topography. Odours can travel for very long distances. Prior to modernisation at the Kinleith pulp mills, it was not unusual for malodours to be very noticeable 20 km away, and on occasions they could be detected at distances of up to 100 km.[3]

The perception of odour by humans also creates measurement difficulties. The ability to physically smell an odour changes with age, sex and familiarity with the odour. The response to the odour depends on experience of the odour, expectation of nuisance, type of odour and the general state of the individual. Because of the human response factor, measurement of odour needs also to contain an element of assessment of odour nuisance.

The human nose cannot be matched by presently known instruments as far as sensitivity to most odours is concerned. Nor can instruments measure the degree of unpleasantness of an individual compound, let alone a mixed odour stream.[4] It is possible to measure some odorous compounds such as acrylates and hydrogen sulphide at levels detectable by analytical equipment. The ability to measure the chemical composition and concentrations in an effluent is also improving, particularly if the effluent consists of a few compounds. However this does not necessarily indicate odour strength, nor odour impact.

For mixtures, which most effluents are, the analytical equipment is expensive. Identification of the particular odorous compounds is complex, and often open to dispute in a legal challenge.

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3 K Rolfe, 1989, pers comm.

4 K Rolfe, 1980 (a).

This combination of reasons led Rolfe 1980(a) to conclude that methods of sensory analysis are the only practical way of measuring odours in combined exhaust gases. The Dutch experience supports this. The concentration of industry, agriculture and an articulate population with high expectations of quality of life creates a situation in Holland where the number of odour complaints is considerable. It was concluded that chemical analysis was generally of little use in the most common cases where two or more chemicals caused the odour.[5]

In order to use a method of sensory analysis, it is necessary to account for the variability of human perception of odour described earlier. The usual method of overcoming this is to use a panel of samplers, of 'average' odour detecting capacity.

A method of sensory analysis called dynamic dilution testing has been used in New Zealand. This involves the collection of odour into suitable sample bags. The odorous air is then diluted and passed to masks where the samplers record results. The most diluted samples are passed through first to prevent olfactory fatigue, and the proportion of odour increased until odour is detected. The dilution at which at least 50% of the samplers can detect the odour is defined as the 'odour threshold concentration'.

This method has been used to produce two types of information - the efficiency of odour control equipment and the outlet odour emission rate.

It can also be used to set limits on emissions. The odour threshold information is combined with dispersion modelling to calculate maximum ground level concentrations. Dispersion modelling is a method of calculating the dilution achieved from particular discharge points taking into account weather and topography. Emission limits are then set to achieve acceptable ground level concentrations.

The Dutch have used a similar methodology which they call 'olfactometry' for both emission limits and provisional air quality standards. Although time consuming and relatively complex, they decided that it was best able to provide the quantitative assessment tool needed as well as accounting for the human perception of unpleasantness. They have emphasised the need for rigorous methodology, standardisation of equipment, calibration to reference gases, and repeatability and reproducibility standards.[6] This methodology is increasingly being used in the legal and regulatory arena and needs to be reliable.[7]

New Zealand needs to be aware of overseas trends in odour measurement and also develop reliable methods for use in odour nuisance control. The possibilities for continuing to do this and ensuring that expertise is available in odour measurement are

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5 Van Harreveld, 1989.

6 Dutch Normalisation Institute, 1990.

7 Van Harreveld, 1989.

discussed in section 3.4.

Measurement of compliance

The method of panel analysis can also be used to check compliance with an emission limit on a discharge permit. If the emission limit is being exceeded, a sample of the effluent will have detectable odours at above the calculated dilution.

Problems with this method of measuring compliance rise when the sources of odour are diffuse or non-point sources, the odour is a transitory phenomenon, or compliance is being checked in the ambient air. These mainly arise because of the difficulty of collecting an adequate sample. Attempts to capture odours in the ambient air for either chemical or olfactory measurements are difficult. A similar sensory analysis method is used to check compliance with conditions regarding odours in water,[8] but with the advantage that water samples can be taken in the receiving body more easily than odours captured in ambient air.

In these situations, or in the absence of emission limits, assessment of odour will still need to rely on the 'expert nose' test of experienced personnel, or on the qualitative method of complaints and public opinion.

The expert nose is particularly useful to trace a particular part of malfunctioning plant or to distinguish between multiple sources of odour in an area. An updated model for mapping odour sources using complaint statistics, also shows promise for use in the multiple source problem,[9] as does the use of an identified chemical as a 'tracer' in the effluent.[10] Knowledge of the types of process in industry also helps to trace or confine the investigation to a number of sites.[11]

Use of complaints as an indicator of compliance or odour nuisance does have drawbacks. Research has shown that the relationship between the number annoyed by odour and the number who complain means that complaints are not always a valid measure of community annoyance.[12] The case studies in section 2 illustrate that affected residents stop complaining for a number of reasons. Where there is existing public prejudice or a number of sources, human assessment may be limited in usefulness.[13]

The RAPCOs have also commented that odour complaints will often continue, even when odour is substantially controlled, for a variety of reasons such as increased public

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8 Standard methods, 17th Ed. 1990.

9 Tapper and Sudbury, 1991.

10 B Graham, pers comm.

11 R Pilgrim, pers comm.

12 Basarin, Cook, 1982.

13 Tapper, Sudbury, 1991.

expectations for air quality.

However, if used appropriately, complaints are a very useful measurement and various techniques can increase their usefulness. Surveys can document and identify the problem better than ad hoc complaints, though these should also be kept as a record. Records can help both the regulators and the industry which may be trying to identify particular odour sources. The validity of complaints can be checked by maintaining a shadow monitoring scheme. When a known complainant rings, a nearby resident is contacted to check whether they too are experiencing the odour problem. However, a nil response does not necessarily mean minimal or no odour, due to factors such as topography.

There is always the issue of the level of odour nuisance which is more than 'reasonable', which needs to be considered in a compliance situation. This relates both to the intensity and extent of the odour occurrence. Allowance is usually made for equipment malfunction and accidents. There is guidance for tests of 'reasonableness' from both experience and legal cases, but this will essentially be a matter of judgement for the regulator.

3.3 District schemes and plans

Use of appropriate land planning mechanisms potentially gives local authorities a powerful tool to use in ensuring environmental quality for the community. Siting of industries and processes that give rise to odours can be controlled in such a way that effects to other industries and residents in the community are minimized.

Both the Clean Air Act and the Resource Management Act anticipate the use of planning instruments as part of odour nuisance control. However, the inadequacy of planning as a method to prevent odour nuisance or resolve existing odour problems is a common theme in all cases investigated by the team. Looking at the two situations of new developments or existing ones, a number of factors emerge that account for this inadequacy, and can be usefully related to the part of district plans in the new Act.

Establishment of new zones or new industries within a zone

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In both these situations the planners and decision makers need to know whether industries with different environmental effects can be sited together and what restrictions on the industries are required. For new industries in particular, this information is either not available or expertise to investigate industry claims is not sought. In the Meadow Mushrooms case the reality of intensive factory farming or the effects of a large-scale composting operation on a small area of land was not realised. In a recent hearing of a proposal to establish a beeflot with 15,000 head of stock by Five Star Beef (*section 2.3.3*) an independent consultant gave evidence for the company on the potential for odour nuisance. The District Council had no separate technical expert as witness or to assess the evidence.

Currently the RAPCOs from the Department of Health can offer expert advice to local authorities but they can also be subpoened by industry to support the industry case.

Setting appropriate buffer zones also requires experience and considerable information. Formulae that have been derived, such as the Dutch zoning for agricultural uses based on pig equivalents,[14] and the Pork Industry Board code of practice,[15] have required intensive research and development. Councils are more likely to take an educated guess, as they do for bylaws restricting nuisance activities near boundaries. If there are enough cases, some standard formulae can then be developed.

Use of buffer zones presupposes that there is enough area available to create adequate buffer zones. In the case of the Papanui Farm piggeries *(section 2.3.1)*, a piggery as a new establishment of that size would require a 2 km zone to the nearest house following Pork Industry Board guidelines. This cannot be provided. The Meadow Mushroom factory is likewise surrounded by residential areas.

There is also an assumption that all industrial uses will be compatible in a zone and very few restrictions are imposed. The Mt Wellington municipal composting operation was closed down because of health and odour issues for nearby industries. The Auckland City abbatoir rendering plant is upwind of a used car lot and reportedly has a disastrous affect on car sales on days of severe odour nuisance.[16] In Christchurch, a funeral parlour was allowed to establish in an industrial area which contained a waratah post manufacturing plant. The funeral parlour now argues that the smell of hot pitch is bad for their business.[17]

Odour nuisance is only one of the factors that are considered by councils when siting a new industry. Potential employment and rating revenue may push a decision towards approval, over and above the environmental effects. In these cases, the ability to place stringent control on emissions is essential. In Manukau, a fish rendering plant was permitted as a controlled use in an area where, even with the best odour control equipment available, the RAPCO considered that a nuisance would occur. The RAPCO subsequently refused to issue a licence based on the potential for nuisance.[18]

Existing uses

Changes in technology in the industry or the scale of operation which cannot be predicted at the time of zoning, are the source of a number of existing use odour problems. In the Alliance Kaiapoi case *(section 2.2)*, the establishment of a new rendering plant which was allowed as of right in the zone, caused odour nuisance. The changes in the effluent treatment system also were a major factor in the string of odour events and could not be predicted or controlled through planning. At the Manakau Sewage Purification Works established in 1960 *(section 2.3.2)*, the fixed growth reactors

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14 Van Harreveld, 1989.

15 NZ Pork Industry Board, 1990.

16 K Mahon, pers comm.

17 D Pullen, pers comm.

18 K Rolfe, pers comm.

installed in 1983 became a major source of odour.

Planning controls often have little or no control over changes in the scale of operations. At the Papanui piggery the number of pigs increased from an undetermined number to over 700 in 1987 and to 1,281 in 1990. The only restriction is on siting of buildings from the boundary.

Where inappropriate uses are allowed as of right in a zone, one possibility is to obtain a change of zoning. This cannot usurp existing use rights but can keep the source of the problem at the existing scale and intensity in the new zone. The company is then aware of the expectations of the community, especially with reference to expansion of operations at that site. As obvious from the Meadow Mushroom case, this does not solve the odour problem.

However, changes in planning zones have more often led to the creation of an odour nuisance. There is often inadequate consideration of the effects of changes in zoning which then allows incompatible activities in close proximity. When the Whenuapai village was zoned deferred residential, there was little consideration of adjoining uses such as the piggery. In Hornby, there were two houses when the Ravensdown Fertiliser Works were established and it is now surrounded by houses. At Washdyke Timaru, South Canterbury Byproducts owned the original houses near the site. There are now 22, mainly privately owned, and a new residential subdivision is being approved down-wind of the plant.[19] At the Alliance Kaiapoi Plant, new residential areas were established in the area downwind of the plant. With the benefit of hindsight, the company have now indicated that it was generally not aware of the implications of these planning changes.[20]

In a number of cases there has been erosion of buffer zones over time, either by planning changes or encroachment. Unless buffer zones are guaranteed by law or ownership this will tend to happen. The Acacia Bay sewage treatment plant at Taupo had a buffer zone of 300m to residential areas and attempts were made to narrow it.[21] Alex Harvey Industries in Auckland had a substantial buffer zone eroded over time.[22]

Summary

In summary, the usefulness of town planning methods to protect communities is definitely restricted by the inability to predict the future, accommodate changing circumstances and restrict existing uses which cause odour problems. Furthermore, planning must take account of a number of often conflicting matters and potential for odour alone will very rarely be considered grounds for refusal of a planning consent.

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19 D Pullen, pers comm.

20 R Cooke, pers comm.

21 J Fletcher, pers comm.

22 K Rolfe, pers comm.

As a sole method of nuisance control or prevention it is not adequate, though it can be argued that planning is a stronger tool for new developments than for existing uses.

It must be combined with the ability to impose controls and enforcement actions.

District Plans

The Resource Management Act uses a district planning process to control adverse effects of land use. The presumption is that all uses of land are permitted unless specifically prohibited (s.9). Controls on a permitted activity can only then be exerted by way of an enforcement order or abatement notice. It is anticipated therefore, that councils will specify a set of environmental criteria or standards in the plan. Failure to meet these would trigger the need for the land use to gain a resource consent. However, for odour nuisance, no such standards exist at present.

The plan can specify different types of activity which will require resource consents. The plan may also use s.76(4)(e) to insert a rule to require a consent for activities not specifically referred to in the plan. On consents for controlled activities, there is a restricted ability to then impose conditions. For other activity types the conditions imposed are not restricted to considerations in the plan. Conditions relating to odour nuisance could be imposed, even if not specifically mentioned in the environmental objectives of the plan.

However, the functions of plans and consents are to control adverse effects of land use and conditions can only relate to the use of land. It is unlikely that a land use consent could be used to control a discharge to air. The boundary between control of odour through land consents and through discharge permits is not clear.

Regional plans will also be important in odour control to require discharge permits for odiferous activities that are not defined as industrial and trade premises and not adequately controlled though land use consents.

Availability of expertise

The examples in this section also illustrate that there is a need for the planning and consent granting authorities to have access to information, and expertise available to them either as staff or as consultants. For resource consents, environmental assessment requirements will mean information will be tabled. However, there is still a requirement for expertise in councils to assess the information provided and establish the need for planning instruments, such as rules and controlled activities. The advantage of holding that expertise as staff members, is that there is the potential to form an 'institutional memory' as to the need for certain rights and restrictions.

The RAPCOs will no longer be available as a central government agency to give advice to regional government and collect information on appropriate standards and new potentials for control of odour. The establishment of national air quality standards would however help councils to make appropriate planning decisions.

The information base in councils and in any advisory agency will change over time and with developments such as change in technology. Land use will also inevitably change with time. Therefore councils at both the district and regional level should retain the ability to review conditions in resource consents at appropriate times, by inclusion of a review clause at the time of granting the consent.

3.4 Air quality standards

Standards, criteria, performance standards and limits are possible means by which environmental quality can be measured and maintained.

In this report, 'standard' is used in relation to ambient air quality. 'Emission limit' refers to a specific limit on the emitted pollutant and is used to set conditions on discharge permits.

Under the Clean Air Act, emission limits were used to support the best practicable means (BPM) rather than ambient air standards. For odour, there are difficulties in setting meaningful odour emission limits and ensuring compliance. This encouraged the practice of specifying licence conditions which put a measurable control on the process which produces the odour and for which compliance could be monitored.

The Resource Management Act emphasises controlling and monitoring the adverse effects on the environment. It provides for the setting of national air quality standards which must be reflected in regional plans. It also of course provides for conditions to be set on discharge permits, as a tool towards reaching the standard.

As noted in section 3.1, there are no minimum standards for the effects of discharges to air or for refusing a resource consent, as are provided for water. Recommendations were made by this Office to include these in the Act without success. It is now recommended that they are included in regional plans. These mimimum standards are intended to help prevent degradation due to human activities rather than set absolute standards of environmental quality. They do, however, provide basic guidance for councils and some certainty for industry when applying for discharge permits.

Setting standards

It is generally perceived that there is little difficulty in setting ambient air quality standards for air pollutants such as smoke, particulates and carbon monoxide. International standards are available through organisations such as the World Health Organisation and are applicable to New Zealand, and analytical techniques are available to check air quality.

It is, however, much more difficult to set quantitative standards for odour. A process of development will be required to aim towards a national standard which goes beyond the qualitative minimum statement. The concepts of 'reasonable time' and averaging would need to be considered. Such a standard must also be designed so as to prevent conflict with existing Clean Air licences and emission limits.

The Dutch appear to be the most advanced of the international research towards a quantitative 'odour concentration standard'.[23]

As an example, in 1984, the following provisional odour concentration standard was published.

> *"For existing installations, an hourly average concentration of 1 odour unit per m^3 may not be exceeded for more than 2% of time at locations with domestic dwellings."*
>
> For new installations a more stringent criterion was chosen.
>
> *"... no more than 0.5% of yearly hours an hourly average concentration of 1 odour unit per m^3 may be exceeded if domestic dwellings are present."*

By definition, 1 odour unit per m^3 is the concentration at the odour threshold.

This standard includes a measure of acceptable compliance, is tied to the effect on the environment rather than the source and is applicable to diffuse or point sources. Compliance can be measured with complaints or a panel.

This was immediately put to use by regulatory authorities even though it was not legally binding. The major difficulty was a problem of development and standardisation of the analytical tools being used, and therefore the major drive has to been to reach an acceptable standard of quality assurance for olfactometry, prior to the legal implementation of the standard.

This can imply a very strict odour standard for 98% (or 99.5%) of the time, with the implication of no odour on an hourly average. Conversely, if the one hour average is made up of very high odour peaks for short times, the impact may be totally unreasonable but the hourly average less than one odour unit. In addition, objectionable odour for 2% (or for 0.5%) of the time may also be entirely unreasonable - 2% is 175 hours per year and 0.5% amounts to 44 hours/year. Others have suggested that odour complaints will occur if odour at the boundary is 4 to 5 times the odour threshold on a short term average, and this could be a potential standard.[24]

Development of NZ standards and limits

A quantitative standard is compatible with the aims of the Resource Management Act and could also be adopted in New Zealand. It would be supported by the setting of maximum permissible odour emission rates as suggested by Rolfe (1980(a)) and concentration standards for discrete compounds. To develop these regulatory tools will however need additional development and refinement of techniques and methodology in the following areas: measurement of odour thresholds, identification of odour sources

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23 Van Harreveld, 1989.

24 D Pullen, R Pilgrim, pers comm.

and emission limits, and reliable methods of compliance monitoring.

These would then be applied and enforced by the regional councils, with the community acting as the final judge as to whether the standards are appropriate. Such standards may not necessarily be uniform. They will need to be applicable to community expectations, established by methods such as surveys. Until such time, as standards are available, regional and district councils will need to use rules in plans to control potentially odorous industries.

The responsibility for development of standards clearly lies with the Minister for the Environment. Water quality criteria and techniques for assessing water quality have already been developed by central government and are available and used by regional government. Air is a common good, like water, and techniques for assessing odour in air and setting standards need the same development.

The actual development of these techniques and standards requires expertise as well as the commitment of central government to the task. Central government presently has a body of expertise in the Air Pollution Control group and with some staff of the NECAL laboratory of DSIR. Despite the previous emphasis towards process control rather than odour emission limits, these groups are the repository in New Zealand of experience and information on overseas research, standards and licences. There are strong reasons to retain and build on the expertise which has been developed to date.

3.5 Licences and discharge permits

The Resource Management Act replaces Clean Air licences for scheduled processes with a requirement for discharge permits for contaminants from industrial and trade premises or from other sites if specified in a plan. Regional plans will be an important mechanism for requiring controls on potentially odorous premises for which permits are not specified in the Act.

Responsibilities

Granting of licences was previously split between district authorities and the DOH and will be now the responsibility of the regional councils. This will be a substantial work load, some of which may be delegated. A working group has been set up by some regional councils to consider how to fulfill their responsibilities in both the transitional phase and longer term. They are considering the extent of delegation to territorial authorities and the retention of expertise. There have as yet been no policy decisions resulting from this.[25]

Conditions

Councils will need expertise or access to expertise both on the environmental effects of air pollutants, and to set conditions on acceptable emission limits for discharges.

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[25] G Miller, pers comm.

Clean Air licenses often used conditions on process controls to prevent odours forming, in place of emission limits. There is no reason why this approach cannot still be used provided that it can be shown to be within the purpose of the Act with its emphasis on downstream effects. However, it is unlikely that the authority will have the detailed expertise or access to company information which is required to set such controls.

The Clean Air Act provided for pre-construction approval and relicensing at specified dates, with the ability to review at any time. This was very useful to reassess the best practicable means (BPM), the suitability of licence conditions, and respond to changing circumstances in the industry and the environment. Authorities should use the ability in the Resource Management Act to include a review clause in the permit. This will give industry the security of a known length of permit but allow the authority to remedy unpredicted environmental impacts.

Some methods of monitoring for compliance with permit conditions have been discussed in section 3.2. The previous practice has been for industry to self-monitor where possible. This practice has shown itself to be of value as it encourages participation and interest by the industry.

Refusals

The Clean Air Act allowed for a licence to be refused on certain grounds. This provision was little used but useful as a final backstop. The Resource Management Act provides no grounds for refusal of a discharge permit for air, though it does for water. However, an authority can presumably decline a permit if it contradicts the purpose of the Act and successful control of odour is not possible with the present technology or the particular situation in which the premises is situated. Permits are also not allowed for a prohibited activity.

Integrated environmental management

A major problem identified in the present investigation has the potential to be better resolved with the new Resource Management Act. This was the inability of the different Acts to formally address cross-media effects between air and water when granting rights and licences. The lack of integration of air and water quality management meant that there was the potential for improvements in one environmental medium to be achieved at the expense of another. This was compounded by the limited ability to consider different consents together.

Clean Air licenses, water rights and planning consents were all granted by different authorities responsible to different Acts. There was the potential for one authority to leave responsibility with another authority. This has been reported where planning authorities fail to recognise the importance of appropriate siting as a major part of odour nuisance control (section 3.3).

In the Alliance Kaiapoi case *(section 2.2)*, odour control from land effluent was not recognised as the responsibility of either of the two regulatory agencies. Improvements in water effluent quality were accompanied by air quality degradation. In the Clean Air

Act, air pollutants as specified in the First Schedule from any processes on a part A premise are covered by the licence. This covers waste treatment but was not uniformly applied and the strength of this provision was never tested in the Courts.

In some cases the public tried to express concerns about one environmental effect in an inappropriate forum. This happened particularly when consents were obtained in separate hearings. In an Ashburton piggery case,[26] the piggery already had a planning use consent. When the water right was advertised, most of the objections were to do with odour, which could not be addressed in the water right hearing. Planning consents were granted first in the Te Poi Skin Processors Ltd case *(section 2.3.4)*. The applicant does not need to apply for a Clean Air licence until later, yet some of the information in that application could have been useful in the planning hearing.

Separation of consents may also mean the industry expects to proceed having gained one consent. This expectation was not realised in the case of a Manukau fish rendering plant,[27] where the RAPCO subsequently decided that the plant should not be licenced.

Joint hearings for planning and water rights have helped to some extent as they allow all consents to be considered together as in the Te Poi and Five Star Beef *(section 2.3.3)* cases. They do not however allow for the integrated treatment of consents.

In the Resource Management Act, the same authority is responsible for both air and water quality. As these are under the same statute there will be a common set of policies in the Council and integrated management of environmental quality is possible.

While the new Act does not require all consent applications to be presented together, the applicant must state what consents are required and if they have applied for them. The authority can decide to wait for other applications if they are connected in effect.

The potential for gaps in consideration of effects still exists between land use and air and water consents. However, the requirement for joint hearings for consents in relation to the same proposal will mean that at least all the information is heard by both regulators.

3.6 Best practicable means/option

The Clean Air Act had a duty on occupiers of premises to adopt the best practicable means (BPM) of minimising the emissions of air pollutants. As the BPM changes over time, this duty led to a gradual but continual improvement in odour nuisance control. Often new methods of control were installed in a step-by-step fashion at the time of plant refurbishment or process changes. When Kinleith pulp and paper plant put in better processing equipment they also installed additional odour control equipment.[28]

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26 B Ayrey, pers comm.

27 K Rolfe, pers comm.

28 K Rolfe, pers comm.

The BPM duty specifically included a consideration of the manufacturing process, not only control equipment. The RAPCOs attribute much of their success in abating odour nuisance to odour prevention; changing the process to produce less emissions rather than adding on equipment to control emissions. They contend that 'add-on' control equipment will never receive the same priority for installation and maintenance as the essential manufacturing processes which generate the industrial income.

Methodology

As a consequence of this, some licences had specific emission standards, but more often the conditions specified limits on different parts of the process including raw materials. These could be more easily measured and monitored, and acted as a set of complex emission controls. Rendering plant licences specify state of raw material and stabilisation requirements. For a pulp and paper plant, sulphur emissions are controlled through a condition on sulphide concentrations in the black liquor stage.[29]

For odours that are formed, the preferred approach was to collect all the odours into a single source where treatment could be provided if necessary. Odour control equipment is available to control virtually all odours but there are difficulties in installing equipment in old plants and usually a time delay in industry acceptance of a new BPM.

It is worth noting that a common method of control for some air pollutants is generally not applicable for odour. This is dispersion from a high chimney. The logarithmic nature of smell perception means that an impractically high chimney would be needed to disperse most odours to below odour threshold. A reasonable size chimney simply moves the odour further away from the source.[30]

Advantages and disadvantages

A major advantage of BPM was the ability to prevent odorous compounds from forming, at all stages of the industrial process. To achieve this, the RAPCOs had to have a close involvement with industry and access to confidential and commercial information.

There were also some disadvantages to the BPM approach.

The group basically acted as consultants advising industry rather than as regulators. Although effective in preventative pollution control, this 'consultant' role led to difficulties when odour was not successfully controlled and there was a need for a regulator. In those circumstances, it was difficult to press for prosecution without straining the consultative process. The question of liability for advice was never tested, but most RAPCOs guarded against such claims by a disclaimer on their advice.

If the information about the BPM was not known to the authorities, then they could not achieve what might be a necessary level of control to prevent odour nuisance. This is

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29 R Pilgrim, K Rolfe, pers comm.

30 Rolfe, pers comm.

particularly important when the presumption is that the industry has the right to exist. The Clean Air Act duty relates only to the BPM and this may not be sufficient for community concerns.

Lack of information on the BPM was more of a problem with the territorial local authorities responsible for part B and C processes. The majority of local authorities were unfamiliar with the BPM approach and rarely had the technical resources to implement BPM.[31] While the RAPCOs were often asked for advice, they were a small group to service all the authorities.

The cost of BPM and the uncertainty it imposed was a common industry complaint. Only one company in the Auckland region ever underwent an independent economic review to try (unsuccessfully) to substantiate their claims that the BPM proposed was economically crippling.[32] The argument over the cost and uncertainty of BPM often served to defer installing control equipment.

A significant disadvantage of the BPM approach was the lack of public involvement. This is discussed further in section 3.8 but basically resulted from the technical nature and the access to commercial information which had to be kept confidential. Combined with the 'consultant role' it led to a public perception that the RAPCOs were acting for the industry, rather than the community.

Resource Management Act

The Resource Management Act changes the concept of BPM, to the best practicable option (BPO) for controlling adverse effects on the environment. It is one of the methods available in the Act for controlling adverse effects rather than a general duty as in the Clean Air Act or as proposed in an earlier draft of the Resource Management Act. It can only be imposed as an obligation if there is a rule in the plan which specifies its use (s.70(2)).

With the test required in s.32 of the Act to show that a particular method is necessary, it is not likely that many authorities will include BPO in their plans as a rule. If they did so, it is further unlikely that the authority staff would have the knowledge to demonstrate adequately what was the BPO and justify its use.

The conclusion is that this technically based method of pollution prevention needs access to commercial information which may not be available in the new regime.

Therefore not requiring BPO as a duty in the Act is appropriate. It will be a useful tool at times, with the significant difference that BPO will go through a public hearing process. Theoretically, strong controls on adverse effects will induce industry to install BPO at permit renewals. This however presumes that there is a strong political will to enforce control on adverse effects.

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31 R Pilgrim, pers comm.

32 K Rolfe, pers comm.

3.7 Nuisance actions

The ultimate enforceability of legislation dealing with nuisances such as odour was of great concern to local councils and communities interviewed in this investigation.

In this section experience with the 'nuisance' action potential of the Clean Air, Town and Country Planning, and Health Acts is reviewed, and problems identified. The section then considers the Resource Management Act, and expresses a view as to the extent to which the new law may effect an improvement.

The potential of the common law to provide assistance is discussed.

Clean Air Act

Under the Clean Air Act, very little case law exists on nuisance actions. The DOH has taken the view that 'prosecutions don't solve problems'; they only serve to punish the industry and take money away from the funds available for clean-up. There were limited powers to close down a process and these related to an imminent danger to public health or offenses under a breach of licence. The solution was seen to be to work with industry and negotiate conditions to install the best practicable means of odour control equipment.[33]

This has led to a stepwise implementation of better control equipment and, in the majority of cases, very significant reductions in odour nuisance.[34]

Until 1989, DOH Head Office approval was required before proceeding with a prosecution. This decision was often slow in coming. In the case of Ivan Watkins DOW, informations were not laid until over 11½ months after the offence.

This departmental attitude encouraged the RAPCO's expertise to stay firmly within technical grounds and provided little incentive for RAPCOs to gather evidence for prosecution. The lack of case law also means lack of guidance on interpretation and an ongoing unwillingness to take prosecutions.

The Act itself specifies strict liability for offences, with such defences as temporary mechanical failure. To obtain a successful prosecution under best practical means (BPM) provisions, the authority in fact requires detailed knowledge of BPM methods appropriate to that industry. Proof of noncompliance with licence conditions was often an easier case to prove.

A recent court case showed, however, that where the licence condition involved shutting the factory down temporarily to prevent pollution, the resultant fine provided very little

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33 J Fletcher, pers comm.

34 K Rolfe, D Pullen, R Pilgrim, pers comm.

disincentive to prevent future pollution episodes.[35]

The Town and Country Planning Act

Section 77 gives a local council the power to abate objectionable elements including odours. The provision cannot be used for a part A Clean Air Act process. It can cover continuing offences.

The difficulty with using this section is that the notice served must either specify that the activity ceases, which councils are unwilling to do, or specify the means reasonably available to the user of the land to remove or reduce the nuisance. A council will often not have the experience to specify such means or will be reluctant to do so where there is a large and complex business. The council knows only that there is an objectionable odour and does not know the best practicable means to alleviate it.

Health Act

Nuisance actions taken under the Health Act s.29 (1) must show that the undertaking is being carried out so as to be unnecessarily offensive or likely to be injurious to health. As the emphasis is on health, there must be something about the activity which infringes at least on enjoyment of property, if not direct health effects.

A nuisance action under s.29 to abate odour from a waste oil reclamation plant at Turua was successfully taken in 1971 by the Hauraki Plains County Council, with evidence from the DOH.[36] However, in the appeal to the High Court of a Health Act prosecution against Meadow Mushrooms, the focus of the argument was on the necessity of the process itself rather than the effect it had on the residents. On the evidence, the company had at the time chosen a method 'necessary' to their business and used that method properly. The local authority failed to provide technical evidence to counter that and therefore the prosecution was overturned.[37]

This decision greatly decreases the usefulness of the Health Act to abate odour nuisance. An offensive process may be being reasonably operated on its own terms, but quite simply be very offensive to those around it. No element of reasonableness remains as to what neighbouring residents should have to endure.

As offences under the Health Act are criminal offences a high standard of proof is required. Once this is proved, defences are still available. If 'all reasonable efforts' were made and the authority cannot prove that there was a better way to prevent or alleviate the nuisance, it can continue. An injunction against an Ashburton pig farmer on grounds of general nuisance failed as 'all reasonable efforts' were being made even though it was

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35 K Rolfe, pers comm.

36 Industrial Recoveries Ltd, DOH, file 340-3-977.

37 Meadow Mushrooms v Annan, Hardie Boys J, High Court Christchurch Registry, Ap 213/86, 9 January 1987.

the source of odour.[38] This again emphasises the point from the Meadow Mushrooms case that the process or activity has the right to continue if it is the state of the art at the time, even if the side effect is an odour problem for others.

Local authorities are unwilling to devote staff time and ratepayers' funds to court cases to enforce Health Act odour provisions. Reasons given are:

* gathering court quality documentation is a costly exercise, with other demands for resources;
* possible need to research means of abatement to prove better means available and counter company technical experts;
* council is required to decide on the conflict of interest between two ratepayers' groups - the industry and the affected residents;
* successful prosecution may close a major employer;
* action should be taken by the DOH if the premises have a part A licence.

The Act and its interpretation by the Courts increases the uncertainty of obtaining a successful resolution and further decreases the willingness to take cases to court. The authorities do not devote ratepayers' funds to legal action unless they have a high likelihood of success.

Resource Management Act

Four themes emerge from the discussion of the usefulness of actions taken under the previous statutory legislation. These are:

(1) difficulty and expense of obtaining court quality documentation;
(2) proof of means of control required;
(3) attitude of the authorities administering statute;
(4) potential for delay.

These have been analysed in relationship to the potential of the new Act to aid the situation.

Documentation

The first theme is that obtaining court quality documentation of nuisance is considered to be time consuming and difficult. Under the Clean Air Act, it may be relatively easy to obtain documentation of breach of licence conditions from monitoring records. However local authorities have often been advised by legal counsel to undertake special surveys and see a need to be sure of 'nuisance' before committing funds to court action. Yet the perception of 'actionable nuisance' is subjective as well as analytical, and the reasonableness of people's complaints are intangible as compared to the apparently tangible benefits of industry and employment. The Resource Management Act focuses on the effects of activities and this difference in purpose could bring a different emphasis to the debate.

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38 J Milligan, pers comm.

Proof of abatement
The second theme is that generally the authority taking prosecution is required to prove in some way that a method of abating the nuisance is possible and has not been used. If there is no such method, the law favours the status quo; protection is greater for the company's activities than for the community environment. Company statements of good intention and endeavours, even if not successful in abating odour nuisance, are given weight by the Courts, particularly when the offence is a criminal one. In practice, even if the company is at fault, a recent court case indicates the judicial unwillingness to penalise industry.[39]

The Act allows prosecutions on the environmental impacts and does not require specification of alternative means of control except for an abatement order. The Courts will still however take offences seriously in that they are a criminal offence, and it will take case law to establish whether the defence of good intention still stands. It does state defences available against strict liability.

Authority attitude
The third theme relates to the prevalent philosophies of the authorities responsible for administering the Acts, which is a general reluctance to take court action. There is no obvious reason why the new Act will alter political will or modify current impediments to action. However, the opportunity to presume that responsibility for action lies with another authority has gone with the integration of statutes into one.

The Act gives no guarantees of environmental quality as a guide for councils. The inclusion of minimum air quality criteria has been suggested in section 3.1, and this may serve to aid council debate as to the need for action. However, minimum air quality criteria are not as yet part of the new Act.

Other factors which have been noted to result in inaction are the 'all or nothing' nature of penalties, or the perception that prosecutions will close down the industry. The Resource Management Act does allow a wider range of measures to be considered through the abatement notice provisions. It should be noted that there are usually options available to abate a nuisance that do not entail closing the plant.

Community action
In one very important aspect the Act does provide mechanisms for the community concerned to take action if they believe that the responsible authority is not willing to act. An enforcement order (s.314) can be sought by any person (with resources to pursue it) from the Planning Tribunal. They can be obtained not only to enforce compliance with a plan or resource consent but also when an activity is

> *"Actually noxious, dangerous, offensive or objectionable to such an extent that it has or is likely to have an adverse effect on the environment."*

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[39] NZ Herald, 21 May 1991 - case of Tasman Pulp and Paper Company Ltd, Kawerau.

This provision may well assist someone who finds that an offending party is operating within the terms of a consent but still producing an odour nuisance.

If the request for an enforcement order is successful, the Tribunal can order compliance but also can order reparations for the effect on the environment and to compensate others for the expense taken to remedy an adverse effect on the environment. Another advantage is that the Tribunal brings experience in environmental issues to the decision: actions under the Health and Clean Air Acts were taken to District Courts which had a very limited environmental case load. The community also has the ability to apply to the Planning Tribunal for a declaration as to whether a function or power exists (s.310). This could be used to show that a local authority is not exercising its duties under the Act.

Potential delays
The fourth theme relates to the potential for delay. Once a legal action is underway, other remedies cannot be tried and the existing situation continues. This is particularly well illustrated by the Meadow Mushrooms case.

The Act has strict time limits on public procedures which may help in this regard. There is also the ability for the public to obtain a declaration (s.310) as to whether or not the authority is acting appropriately within its functions. The Act cannot of course address the issue of time delays in the court system.

The Resource Management Act does change some aspects of the ability to present nuisance cases, particularly by shifting cases to the Planning Tribunal and giving any person the right to take enforcement order action. It remains to be seen whether more cases are brought by local authorities.

Common Law
A common law nuisance action may be brought when an activity creates an objectionable odour which unreasonably interferes with a person's use of land, or with the enjoyment of a public good.

The private nuisance cases which have been taken indicate some advantages over taking action under the statutes discussed. No actions in public nuisance have been recorded in New Zealand.

For a successful private nuisance case, the plaintiff must show that the defendant was carrying on some activity on its land which unreasonably interfered with the plaintiff's enjoyment of its land. The plaintiff's use must be an ordinary one.

In the case of an odour nuisance, it has been sufficient that the smell experienced by the plaintiff is such as to impair enjoyment. There is no need for sophisticated measuring devices or for a large-scale community sampling to satisfy the court that the plaintiff has a cause of action. The evidence of the plaintiff, a couple of neighbours, and the Regional Air Pollution Officer, has been sufficient, and possibly the Judge will make a site visit.

The harm which the plaintiff complains of must be material, or of some consequence. If the harm is to the plaintiff's personal comfort, the locality in which the plaintiff lives is relevant. For example, country dwellers must expect some rural smells, and must not be unduly sensitive.

The defendant will not be liable if the use being made of the land is an ordinary use which is being carried out in a reasonable way and with due regard for neighbours. Locality will be relevant.

In a case in which residents near an oil refinery complained of odour emissions,[40] it was argued that the housing was close to an industrial area and therefore some background oil smell was to be expected. However, the Judge accepted the evidence of residents that the odours were nauseating and in excess of that 'reasonably expected'. A New Zealand case reached a similar conclusion when residents in a rural area complained the smells were beyond what would reasonably be expected, even in a rural area.[41]

It is not necessarily a defence that the defendant is acting in accordance with a licence or authorisation. The legislation must make it clear if it intends to confer an immunity on those who comply with a licence. In *Sullivan v Desrosiers*[42] the defendants were liable for odours emitted from their piggery, although they had complied with all the relevant legal requirements.

The Desrosiers case also illustrates that it is no defence for the defendant to claim "I got here first." The court found that the piggery was creating a nuisance, even though the area had once been rural, and was now residential.

In cases where the nature of the locality changes around the nuisance, the defendant is required to exercise reasonable care to ensure the state of affairs does not harm neighbours. This would suggest the defendant is expected to use measures available to the industry to reduce odours.

It is not a defence that the offender had taken reasonable steps to abate the nuisance. The plaintiff is entitled to a remedy for loss of enjoyment of land where the defendant's action is not an ordinary use of land carried on in a reasonable way. In an English case, [43] a pig farmer was ordered to pay damages for causing a loss of amenity even though he had taken steps to prevent a stench. In a New Zealand case[44] the Judge granted an injunction requiring the farmer to adopt a method for treatment of cow shed effluent which was less likely to be offensive.

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40 Halsey v Esso Petroleum [1961] 1 WLR 683.

41 Wright v New Zealand Co-operative Dairy Farming Co. [1924] GLR 478.

42 Desrosiers v Sullivan Farms Ltd 169 APR 243, (1986) 40 C.C.L.T. 66.

43 Bone v Seale [1975] 1 WLR 797.

44 Colson v Lockly Farm Park Ltd (Unreported, 22 November 1985 (Bisson J) A 72/80).

Damages and an injunction are both possible remedies. A plaintiff may also recover the cost involved in averting the threat of physical injury to his or her property. Damages may be awarded for interference with comfort and convenience, even where no physical loss was suffered.[45]

In cases where the nuisance is of a continuing kind, damages will not usually be adequate, and the plaintiff will be entitled to an injunction. An injunction may require the defendant to cease causing the nuisance, or to put an end to an existing state of affairs which is causing the nuisance.

An interim injunction may be granted immediately to require the defendant to stop a nuisance occurring. The plaintiff will need to give an undertaking to meet damage caused to the defendant in the event that the court, as a result of the hearing, finds in favour of the defendant.

The common law is well able to cope with cases of odour nuisance in both being able to assess evidence which is not 'objective' and to assess its remedies. There are, however, two reasons why common law actions are not often taken: cost and expectation that the statutes and authorities should protect community rights.

Action at common law is expensive. Costs awarded seldom cover the full costs of the action. In most cases, where both the parties have good cases, the court allows costs to lie where they fall.

The Legal Services Act 1991 does not change the situation for community or environmental groups.

3.8 Public participation

Community aspirations and expectations are an important element in odour nuisance control. As it is the community which experiences the problem, levels of control have to be acceptable to them. Additionally, redress of an odour problem is often a lengthy process and rarely reaches a point where no odour is ever experienced. If the community is not satisfied that their concerns are being met, this leads to ongoing complaints and dissatisfaction with the authorities.

The Clean Air Act licence granting procedure had no direct public input. There was consultation with the local authority, but there was no requirement on the local authority to publicise the draft licence. To be effective, public involvement needs to be direct and as informal as possible.

The absence of public procedures in the Act meant that there were no resources available to encourage participation. Access to commercial information was another major reason for the closed discussions on licences between the DOH and the company.

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45 Bone v Seale [1975] 1 WLR 797.

Lack of community involvement builds distrust, as has been seen in both the Meadow Mushrooms and Alliance Kaiapoi case studies. When odour problems continued, the companies and the authorities lost all credibility with the residents.

There is a very strong and increasing desire by the public to be involved in environmental issues that concern their community. Communities will try to make their concerns known even when this is not legally allowed, such as consideration of odour in water right hearings.

Community involvement during the process of controlling odour also works well in terms of public participation. In Auckland, odour control at Alex Harvey Industries was going to take up to two years to install. The convening of an Environmental Committee which included residents led to a gradual decrease in odour complaints over that time as residents were aware of the progress being made.[46]

There is a liaison group operating very successfully between residents and works managers at the Manukau Sewage Purification Works. The residents that are affected can get information easily on the sources of odour events and what is being done and the group can act as a focus for complaints.

Although odour control is a very technical subject, the residents in this group are increasingly knowledgeable and can participate in decisions on appropriate remedies. This builds up trust that the management are doing what they can and helps understanding when the problem continues.

The Heads of Agreement that has been reached in the Five Star Beef case is another example of community involvement to allay concerns of potential problems. The local community will have access to monitoring information from both the company and the statutory authority.

The Resource Management Act

The Resource Management Act allows for public participation in establishing plans and rules and granting all resource consents, including discharge permits to air. There are no restrictions on standing. Within certain limits, the public can also ask for changes to rules and plans and enforcement orders. This has the potential to resolve effects that were unforseen at the time of establishing the plan or discharge permit.

The actual extent of public participation will depend on the attitude of the authorities and their willingness to respond to community concerns. The Act provides for public involvement in mechanisms such as pre-hearing meetings, which have been successfully used in other consent hearings to resolve differences in an informal setting. Working groups have in the past tended to involve only technical representatives. However, the examples quoted above show how the inclusion of representatives of interest groups adds

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[46] Rolfe 1982.

to the credibility of the group and helps resolution of problems.

Authorities may also have to consider appointing an independent party to help resolve ongoing problems. Even if the authority is convening the working group, measures such as an independent chairperson will counter any accusations of bias and help the authority to maintain their decision making neutrality.

With odour problems, the authority must recognise and acknowledge the perceptive aspect of nuisance, rather than rely solely on technical assessment. Community involvement in documentation and sensory techniques, such as dynamic dilution testing, are potential methods for encouraging participation and improving agency credibility.

Having involved the community in the pre-consent and consent stages, it is equally important to continue the involvement with compliance and monitoring results. The results of surveys or actions should be directed back to those that are affected - the community.

4.0 CONCLUSIONS AND RECOMMENDATIONS

This investigation has identified provisions in environmental legislation which make it difficult for public authorities to ensure their communities are protected from an odour nuisance. These difficulties have resulted in long histories of severe odour problems and frustration for both public authorities and the affected residents in some areas. It is not surprising, given the historical record, that in some cases the frustration has resulted in a less than adequate performance by officials in both Central and Local Government.

The provisions of the Clean Air Act have generally led to a notable reduction in air pollution problems, of which odour is a major component. Where an industry has been willing to listen to community concern and advice from RAPCOs, progress has been made in alleviating the problems. Where there is a lack of financial resources or where an industry has preferred to safeguard its own interests at the expense of the local community, little progress has been made. In some instances, companies have made genuine attempts to research new methods and initiate new processes which have not always been successful. The human nose is extremely sensitive and in these instances separation of the smell from the community is the only realistic solution.

4.1 Capability of the System

The previous regime for odour nuisance control relied on a combination of planning controls for appropriate siting of industries and land uses, and a licensing system to impose specific odour controls, either process controls or control equipment. The Resource Management Act also combines land use planning and discharge controls but puts an emphasis on prevention of adverse effects by including "avoiding, remedying or mitigating" adverse effects in the purpose statement. The conclusions that can be made, as a result of this investigation, have dealt with the capability of the earlier system to maintain environmental quality and the performance of public authorities. Recommendations on remedial actions are made in relationship to the new resource management regime.

The partnership between the previous town planning and clean air legislation has usually been put into effect by the use of planning as the primary control as to whether the industry is allowed to establish. This assumption that planning can prevent odour problems was in fact diluted by the number of issues Councils consider when making planning decisions. Odour is, and should be, only one of the considerations of a land use consent. In addition, land uses and industrial technology change over time, and this investigation has identified many instances where planning mechanisms could not adequately deal with these changes and maintain environmental quality.

These conclusions emphasise the importance of other methods of odour control such as regulations and permits. In this respect there are some fundamental provisions of the Resource Management Act which are of concern.

The presumption of the Resource Management Act in relation to land is permissive rather than restrictive, and likewise the only restriction on discharges of contaminants

to air is a requirement for discharge permits from a limited range of industries. Air, like water, is a common good and a medium within which contaminants are dispersed - unlike land where private property rights and duties are assumed. Discharges into air should be treated in a similar way to discharges into water.

A consequence of the different treatment of air and water is that there is no guidance given to authorities as to effects in air that should be considered before allowing activities as "permitted activities" in regional plans (s.70) or before granting discharge permits (s.107).

Given the greater reliance on regional and district plans with clearly identified objectives, criteria and rules to control adverse effects on the environment, and the permissive presumption of land use, this lack of guidance is of concern. This concern is heightened by the absence of any mention of odour (except in relation to discharges to water) in the Act and lack of well-defined standards and emission limits available for use by Councils. Therefore Regional and District Councils would benefit from some national guidance.

Recommendation

1. That Regional Councils should include a provision in their regional plan for the control of discharges of contaminants to air. The objective would be to limit, after reasonable mixing, the following effects:

   (a) any dense smoke or other particulate matter;
   (b) any emission of objectionable odour or fumes;
   (c) any adverse effects arising from photochemical effects (i.e. photochemical smog);
   (d) any adverse effects on the health of persons living or working in the vicinity;
   (e) any adverse effects on ecosystems;
   (f) damage to any property (not being property owned by those controlling the activity);
   (g) contravention of any regional or national environmental standards. *(section 3.1)*

Technical standards and emission limits for condition on consents are needed by Councils so that they can fulfil their resource management responsibilities. There are methods and procedures available for the assessment of odours and their adverse effects on the environment, but these require further development before they can be used in plans and discharge permits.

It is clearly a Central Government responsibility to develop these standards and limits, as has already occurred for water quality and water discharges. There is also a need to develop methods and procedures to verify whether odour control objectives and standards are being met and discharge conditions complied with.

To undertake this development requires expertise which is in danger of being lost, with the dissolution of the Air Pollution Control Unit of the Department of Health. This

expertise should be retained in some way in the Crown resource, such as in one of the Crown Research Institutes.

Recommendation

2. That the Minister for the Environment undertakes to develop the methodology that will establish workable technical standards and emission limits and procedures to verify compliance.

Recommendation

3. That the Minister for the Environment recommends national environmental standards for odour as a contaminant.

Recommendation

4. That the Minister of Science Research and Technology include provision in the CRI structure for retaining and developing existing expertise in air pollution control methodology. *(sections 3.2, 3.4)*

My advice to the Select Committee on the last draft of the Resource Management Bill noted that there were premises that had definitely given rise to odour problems in the past, such as composting operations or intensive farming (piggeries in particular), or new industries that potentially could cause odours such as the Five Star Beef feedlot proposal, that did not require a discharge permit unless specified in a plan. My recommendation that the definition of "industrial and trade premises" should be expanded to include these activities was accepted. However, a subsequent change to a transitional provision (s.418) means that a number of industries that previously were licensed are now exempt from any discharge permit requirements for a period of three years, unless a rule in a regional plan provides otherwise. This should be remedied, as it would not seem to be the intention of the Act to remove existing rights and obligations.

Recommendation

5. That the Minister for the Environment take action either by way of an amendment or a regulation using s.360 (1)(g) of the Act to ensure that any use of a process involving waste materials, composting of organic materials, and factory farming which was being carried on at 1 October 1991 under a Clean Air Act licence is required to continue to comply with the conditions of that licence. *(section 3.1)*

A major problem identified in the present legislation was the inability of the different authorities to formally address cross media effects between air and water. In the Resource Management Act, the same authority is responsible for both air and water quality. As these are under the same statute there will be a common set of policies in the authority and integrated management of environmental quality is possible.

There is still a potential for problems to arise as applicants need not necessarily apply for all consents at the same time. This is particularly so between land use consents under territorial authorities and discharge permits under regional authorities as in the Five Star Beef feedlot and the Te Poi Skin Processors plant cases. The requirement for joint hearings will act to prevent these problems, as will the ability granted in s.91 for deferral pending application for additional consents..

Recommendation

6. That Regional and District Councils exercise their ability not to proceed with an application if it requires other consents with some bearing on the proposal. *(section 3.5)*

Accompanying the increasing awareness of environmental issues in the community is an increased desire for participation in decision making procedures. The licensing procedure under the Clean Air Act excluded the public and led to criticism of the regulators and attempts to address concerns about odour in other inappropriate consent hearings. This desire to be involved extends to interest in ongoing monitoring and compliance. There has been criticism of authorities in the case studies for not involving the affected communities and keeping them informed.

Public participation is most effective when the public is adequately informed and procedures are clear. All procedures under the Resource Management Act allow for public input and Councils should encourage involvement at an early stage. Pre-hearing meetings are allowed for in the Act. These and working groups allow debate in an informal setting.

Recommendation

7. That the Canterbury Regional Council and Selwyn District Council in particular, and all other Regional and District Councils where there are activities with odour problems, encourage formal and informal involvement of the community by facilitating the establishment of working groups, pre-hearing meetings and ongoing consultative groups. *(sections 2.1, 3.8)*

In a situation where planning controls and consents have failed to prevent or resolve an odour problem, there is a need for enforcement action of some type. The investigation has noted a reluctance on the part of regulators to take legal action for a number of reasons, most of which are not markedly changed by the Resource Management Act.

The Act does, however, provide mechanisms in addition to offence proceedings to enforce compliance with conditions on consents and prevent or mitigate adverse effects. These are abatement notices, issued by the regulator, and enforcement orders which are issued by the Planning Tribunal. The latter can be applied for by any person, which may help to get redress where the authority is reluctant to act. The ability to use these mechanisms may be constrained in the case of odour nuisance by a lack of information on methods of mitigation.

The best practicable means concept of the Clean Air Act achieved a progressive improvement of air pollution control and odour control in most instances. This concept has been replaced by "best practicable option" in the Resource Management Act, but is not a general duty. The difficulty in obtaining access to confidential information could limit use of the best practicable option.

For these reasons every endeavour should be made by public authorities to keep up to date on latest techniques and to encourage industry to use the best practicable option and to seek research assistance from the appropriate Crown Research Institute.

Recommendation

8. That Regional Council staff maintain a close liaison with the appropriate Crown Research Institute and ensure new technology is adopted. (*section 3.6)*

Recommendation

9. That Regional Councils, when issuing discharge permits, allow for changes in circumstances both in the industry and the surrounding land uses by including a review clause in the conditions of the permit. (*section 3.5*)

4.2 Performance of Public Authorities

The investigation also found that the performance of public authorities was constrained in relation to odour control. Where staff were unable to resolve problems in situations of ongoing nuisance, this lead to frustration and less than effective performance.

The inability to resolve problems was variously due to statutory deficiencies, lack of industry commitment and lack of political will to protect local community interests. The capability of staff was sometimes reflected in the inability to reach innovative solutions.

The performance in the Department of Health Head Office between 1983 and 1988, in failing to finalise and enforce the Clean Air Act licence issued to Meadow Mushrooms, was markedly deficient. Deferral of action, which continues a situation where communities are seriously disadvantaged, should not be allowed to occur.

The Clean Air Act and best practicable means philosophy relied on a close working relationship between the industry and the RAPCOs. Although this was effective to improve odour control in many instances, the RAPCO was essentially in a consultant role and this created difficulties for a supposedly regulatory body. This was compounded by the lack of public involvement in the licence setting procedure.

The Resource Management Act imposes a much more independent role on the regulator and may provide the community with the independent assessment which they see as needed to maintain environmental quality. The regulator must of course have or have access to expertise in order to fulfil their role. It is of concern that the expertise of the

RAPCOs is not being retained. The Councils have convened a working group to consider how best to meet their responsibilities and the extent to which these, if at all, can be transferred to District Councils.

Recommendation

10. That Regional Councils seek and maintain expertise in air pollution control and odour control. *(sections 3.3, 3.5)*

Recommendation

11. That Regional and District Councils implement research and industry standards and guidelines for odour control and monitor their appropriateness for their community. *(sections 3.3, 3.4)*

Recommendation

12. That Regional Councils urgently determine the appropriate extent of air and odour pollution control that can be transferred to District Councils. *(section 3.5)*

The District Councils, with responsibility for part B scheduled premises under the Clean Air Act, never really implemented best practicable means because in general they had very little expertise in air pollution matters. They too will need access to expertise and advice in the new regime, as they will have responsibility for the control of adverse effects arising from the use of land through district plans and land use consents.

Recommendation

13. That District Councils obtain expert advice on air pollution control and odour control when drawing up plans and hearing consents. *(sections 3.3, 3.4)*

The previous legislation made use of zones to combine appropriate land uses and buffers to separate inappropriate ones. Although erosion of buffer zones occurred, and therefore this is only one tool to avoid nuisance, the lack of any or an appropriate buffer was seen to be an important factor in many ongoing odour problems. Four of the investigation case studies involved this factor, the Manukau Sewage Purification Works (MSPW), Papanui piggeries case, Meadow Mushrooms and Alliance Group Kaiapoi Plant.

The new Act can allow for assessment of the suitability of establishing different activities, through use of objectives and standards in the plans. Where control of odour is likely to be difficult, separation of activities should still be promoted, and information on appropriate buffer distances used.

Recommendation

14. That Regional Council and District Councils use existing information on

appropriate separation distances between different activities to avoid odour problems. *(section 3.3)*

The problems that have been identified in the case studies such as Te Poi Skin Processors in relation to consents being applied for and considered at different points in time, and the potential for public confusion have been alleviated by the new legislation, but Councils should note and implement Recommendation 6.

In the Papanui piggeries case, the new requirement for a permit for a discharge to air in three year's time will allow a full assessment of the factors and practicality of odour control.

Likewise, the problems with lack of public participation in processes have been met by the new statutory provisions, but the success of these provisions will depend on Councils actively encouraging participation and advising communities of the new procedures. This will also be useful for companies such as Alliance Group Kaiapoi and Meadow Mushrooms, who did not realise the potential significance of planning changes such as subdivisions to their operations.

Recommendation

15. That Regional and District Councils take an active role in advising their communities of the requirements and provisions of the new legislation.

The difficulty of measuring odour and assessing nuisance has led to a perceived difficulty in dealing with odour problems, especially by local authorities. They consider that gathering documentation for nuisance court cases is time-consuming and costly, and the outcome uncertain because of the subjective nature of the problem. Providing documentation by way of complaints does have some problems, but overall is an effective method. There are also techniques available to verify complaints if bias is suspected. The 'Pollution Hot Line' idea used by some authorities is a useful method of public involvement and improving trust in the organisation.

Recommendation

16. That Regional and District Councils keep records of complaints received and attempt to answer such complaints. *(sections 3.2, 3.8)*

4.3 Actions of Industry in the Case Studies

One of the common themes identified in the case studies was the reluctance of industry to involve the affected public directly in discussions. This leads to poor relationships with the neighbouring community and scepticism as to the sincerity of company efforts to resolve problems. Liaison groups have been shown to be a successful method of meeting these concerns, as at MSPW at Mangere, and have also helped to facilitate consent progresses, as in the Five Star Beef case.

Recommendation

17. That Companies whose activities have caused or have the potential to cause a odour nuisance support the formation of a liaison committee in the area and actively participate by making relevant information freely available. *(section 3.8)*

The Alliance Group Kaiapoi Plant was an example where breakdown of trust between the Company and the residents had occurred. An important factor in this was the continuing odour nuisance despite the efforts of the Company to control the problem. It appears that control was eventually about to be achieved but was overtaken by the decision to close the major portion of the plant due to industry restructuring.

Given the history of odour problems and the uncertainties identified in the legislation, prudent environmental management is necessary to avoid problems in the future.

In the Meadow Mushrooms case, documented information on the ability of the proposed new technology to control odour has not been provided for inspection or assessment. No supporting information has been forthcoming from the Italian Government.

A prudent course of action to alleviate present problems would be to separate all composting processes from residential areas. Transfer of the existing composting process to another location has the potential to also transfer the existing problem.

In the event that the company is unable to relocate on a suitable site, and given that the technology is unproven in New Zealand and the extent of odour control unknown, odour control equipment such as wet scrubbers and biofilters should be installed on the tunnel houses.

Recommendation

18. That Meadow Mushrooms install the tunnel composting buildings on a rural site away from residential areas. *(section 2.1)*

The Company is innovative in purchasing a new process. Information on reactions taking place within the tunnel composting will be of considerable interest to air pollution control officers as well as the Company.

Recommendation

19. That the Company ensure adequate monitoring of emissions is carried out and the data made available to public authorities.

Recommendation

20. That odour control equipment such as wet scrubbers and biofilters are installed on the tunnel houses if odour control becomes necessary. *(section 2.1)*

If the Company chooses to stay on the Prebbleton site there is a need to improve relations with the local community. This would be greatly assisted by having a liaison committee which held regular meetings and in which information was supplied on the nature and extent of emissions and progress on odour control. Sharing the difficulties the Company has encountered in trying to solve the odour problem would assist the understanding of the community. Providing an avenue for complaints from the public would also lessen public distrust. Such liaison committees are best set up or facilitated by a public authority. However, their success is entirely dependent on the good will and the commitment of the Company to improve relations.

While Meadow Mushrooms is not required absolutely under current or likely future law to avoid imposing any odour nuisance on its neighbours, the principles of 'common decency' and 'being a good corporate neighbour' should be encouraged.

Recommendation

21. That Meadow Mushrooms support the formation of a liaison committee and actively participate by making relevant information freely available. *(section 2.1)*

This investigation has identified that New Zealand has some difficulty in protecting communities from nauseating odours. There are deficiencies in legislation such that enforcing odour control is difficult. This has led to less than adequate performance by public authorities. However, while the inadequacies due to legislation can be excused, actions taken in ignorance or without due thought cannot. There is plenty of evidence that despite documented odour problems, separation distances or buffer zones were allowed to erode. In some instances the public perceived that the RAPCO was acting as an industry consultant rather than a regulator. The inevitable result was that the public felt abandoned by those who should have been protecting their environmental health.

Odour control technology and methods to assess odour are not well advanced for all industries. Until such time as progress is made in this area, prudent environmental management of industries causing odour problems should be the only course of action for local government. Given the heightened environmental awareness of the New Zealand public it is also good business sense for industry to adopt good environmental management principles. No community should be allowed to suffer from nauseating odours for years on end.

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APPENDICES

I Major Odorous Air Pollutants, Olfactory Thresholds and Related Data.

II Letter from the Parliamentary Commissioner for the Environment to Selwyn District Council 30 August 1991.

III Letter from Meadow Mushrooms to the Parliamentary Commissioner for the Environment 18 July 1991.

Major Odorous Air Pollutants, Olfactory Thresholds, and Related Data

Category and Class	Systemic Chemical Name	Formula	Odor	Mol. Wt.	Odor Threshold, ppm (by vol.)[a]
Sulfur compounds					
Sulfur oxides	Sulfur dioxide	SO_2	Pungent	64	0.47
Sulfides	Hydrogen sulfide	H_2S	Rotten eggs	34	0.0047-0.18
	Carbon disulfide	CS_2	Rotten	76	0.21-0.84
Mercaptans	Methyl mercaptan	CH_3SH	Decayed cabbage	48	2×10^{-5}-0.041
	Ethyl mercaptan	C_2H_5SH	Decayed cabbage	62	3×10^{-5}-0.001
	Propyl mercaptan	C_3H_7SH	Unpleasant	76	0.0016-0.024
	Allyl mercaptan	$CH_2=CHCH_2SH$	Garlic	74	0.003-0.017
	Benzyl mercaptan	$C_6H_5CH_2SH$	Unpleasant	124	0.0026-0.04
Thioethers	Dimethyl sulfide	$(CH_3)_2S$	Decayed cabbage	62	0.003
	Diethyl sulfide	$(C_2H_5)_2S$	Foul, garlic	90	0.0048
	Diallyl disulfide	$(CH_2=CHCH_2S)_2$	Garlic	146	1.1×10^{-4}-0.012
Nitrogen compounds					
Inorganic	Ammonia	NH_3	Pungent	17	0.47-54
Aliphatic amines	Dimethylamine	$(CH_3)_2NH$	Fishy	45	0.047
	Trimethylamine	$(CH_3)_3N$	Fishy-ammoniacal	59	0.00021
Aromatic nitro compounds	2,4,6-Trinitro-*t*-butylxylene (musk)	$C(C_4H_9)(CH_3)_2(NO_2)_3$	Musk	297	6×10^{-6}-0.005
Heterocyclic amines	Pyridine	C_5H_5N	Empyreumatic	79	0.003-0.23
	Benzo[*b*]pyrrole (indole)	C_8H_7N	Fecal	117	
	3-Methylindole (skatole)	C_9H_9N	Fecal	131	0.05
Cyanides	Hydrogen cyanide	HCN	Bitter almonds	27	0.9
	Allylisocyanide	$CH_2=CHCH_2NC$	Sweet repulsive (nauseating)	67	0.18-1.6
	Allylisothiocyanate	$CH_2=CHCH_2SNC$	Mustard oil (nose and eye irritant)	99	0.008-0.42
Selenium compounds					
Selenides	Hydrogen selenide	H_2Se	Putrid	81	4×10^{-4}-0.0012
	Ethylselenomercaptan	C_5H_5SeH	Foul, fetid	109	4×10^{-4}-0.0012
	Diethyl selenide	$(C_2H_5)_2Se$	Putrid (nauseating)	137	0.011
Hydrocarbons, Alcohols, and Oxygenates					
Aliphatic hydrocarbons	2-Butene (butylene)	$CH_3CH=CHCH_3$	Gas-house	56	24
	2-Methylpropene (isobutylene)	$CH_2=C(CH_3)_2$	Gas-house	56	20
Phenol	Phenol	C_6H_5OH	Empyreumatic	94	0.047
Aldehydes	Methanal (formaldehyde)	H_2CO	Pungent	30	1.0
	Ethanal (acetaldehyde)	CH_3CHO	Pungent	44	0.066-2.2
	Propenal (acrolein)	$CH_2=CHCHO$	Burning fat	56	0.021-1.8
	4-Hydroxy-3-methoxy-benzaldehyde (vanillin)	$C_8H_8O_3$	Sweet-aromatic	152	1.1×10^{-4}-2×10^{-7}
Ketones	*d*-2-Keto-1,7,7-trimethylnorcamphene (camphor)	$C_{10}H_{16}O$	Aromatic-earthy	152	1.3
Organic acids	Butanoic acid (butyric acid)	$CH_3CH_2CH_2COOH$	Rancid, perspiration	88	0.001-2.2
	2-Methylbutanoic acid (isovaleric acid)	$(CH_3)_2CHCH_2COOH$	Body odor	102	0.015
	Butanediene (diacetyl)	$(CH_3CO)_2$	Sweet butter	86	0.025
Halogen compounds					
Inorganic	Chlorine	Cl_2	Pungent	71	0.31
Aliphatic halogens	Trichloroethylene	$CHCl=CCl_2$	Aromatic	131	0.21
	Triiodomethane (iodoform)	CHI_3	Antiseptic	394	5×10^{-3}
Aromatic halogens	Benzyl chloride	$C_6H_5CH_2Cl$	Aromatic lacrimator	126.5	0.04-0.31
	Chlorohydroxybenzene (chlorophenol)	$C_6Cl_4(OH)Cl$	Medicinal	128.5	0.0036-0.03
Miscellaneous					
Oxygen	Trioxygen (ozone)	O_3	Irritating	48	0.51

[a] Data from Fazzalari.[38]

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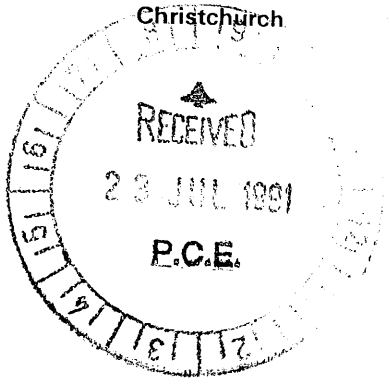

18 July 1991

Mrs H. R. Hughes
Parliamentary Commissioner for the Environment
P.O. Box 10-241
Wellington

Dear Mrs Hughes,

We have received the draft of the section of your report dealing with Meadow Mushrooms Ltd.

As requested by Lucy Harper we have noted our comments and suggested corrections in the attached Appendix. However if there is one point on which all parties agree, it is that a workable solution needs to be found.

Meadow Mushrooms firmly believe that a workable and proven solution is now available and could be fully operational within 18 months.

The problem is caused by the present composting process. Shifting the composting only moves the problem elsewhere - we can not identify any practical alternative sites that do not have residences within a 4-5 km radius. There is however now available an alternative method of composting that does solve the problem - that eliminates the odour nuisance.

The company has been carrying out its own development work on environment controlled composting for nearly three years but it was not until earlier this year that the details on a commercially successful operation in Italy became known and were offered on a technology transfer basis to other conpanies.

After visiting Agrifung in April, senior management returned in June and completed negotiations to purchase the indoor composting technology they have perfected.

Even before visiting Italy we were convinced, from the available overseas research and our own trials, that environment controlled composting was going to solve odour nuisance. Sufficently so to commit the company to an implementation programme that would have the first construction phase completed this year and the second started before December 1992. This timetable was advised

to RAPCO in writing.

Now with the benefit of seeing at first hand a commercial operation successfully producing four times our volume of compost by an indoor controlled environment system, without creating an odour nuisance, and having their technical detail on hand, we can shorten that timetable.

We are now confident that a similar system producing our total compost requirement could be fully operational at our Prebbleton site within 18 months - barring planning obstacles. The structures required would be located where we currently process compost in the open-air but occupy only a third of the area. Preliminary informal discussions have already been held with district council planning staff and plans are being drawn up.

Having identified a final solution the company feels it very counter-productive if the energies of all parties involved can not be directed to its earliest implementation.

Yours faithfully,

R. B. Young.

Roger Young
GENERAL MANAGER

Office of the
PARLIAMENTARY COMMISSIONER FOR THE ENVIRONMENT
Te Kaitiaki Taiao a Te Whare Pāremata

30 August 1991 AIR 2/8

Mrs E A Hurford
Mayor
Selwyn District Council
PO Box 16-342
HORNBY

Dear Mrs Hurford

I understand that Meadow Mushrooms Limited have applied for a building permit and without prejudice a planning application for new compost technology. As you know my Office has been investigating odour problems from a number of sources including those experienced by your ratepayers which are attributed to Meadow Mushrooms.

The results of this investigation will be reported to the House of Representatives. Unfortunately, because of the times that the House will be sitting my report will not be presented until the end of September. Accordingly I have decided to convey to your Council part of the advice contained in my report. I do this under s.16 1(b) of the Environment Act.

The odour problems from mushroom composting have gone on far too long for the wellbeing of the residents of Prebbleton. I believe that, given the potential to obtain redress, no further delays in obtaining that redress are desirable.

On the basis of research information from Europe and Australia, my Office considers the purchase of tunnel composting by Meadow Mushrooms potentially represents a significant step in alleviating odour problems. The research indicates that ammonia will be produced in the tunnels and possibly some other gases but that exhaust air can be easily washed or filtered and treated with existing odour technology, if necessary. (Miller 1989, Gerrits and Van Giensven 1990, Bradwell 1990).

The tunnel technique will still entail preassembly piles of manure and straw, and mixing in the open air. These piles are relatively small in volume, but could I understand have the potential to cause odours at times.

The company contend that their plans for large scale aerobic tunnel composting will not elicit complaints of odour nuisance, and that ammonia produced in the tunnels will disperse rapidly in air.

As I have no specific information on any discharges from their research tunnels or relating to the Italian "Agrifung" system which is being installed, I cannot recommend whether or not odour control equipment is required for this particular technology. However given the long history of odour problems I suggest that prudent environmental management is required. This entails an assessment of the need for control equipment and the imposition of controls if necessary. Given the desire of the company to resolve their odour problems, they presumably are in favour of this assessment.

Unfortunately there is some uncertainty in the transition from the present legislation to the Resource Management Act as to what statutory mechanism can be used to carry out such an assessment.

District Scheme Provisions

Meadow Mushrooms has applied to your Council for building permits under existing use rights. If they are entitled to these, it is my understanding that there are no provisions in the bylaws to control odour. Control needs would be assessed and exerted through the Clean Air Act licensing provisions.

Likewise if the existing use building permit application is declined and the planning consent is heard before 1 October 1991, I understand there are no provisions in the district scheme to justify specific odour control equipment. The Clean Air Act would again be the vehicle.

Clean Air Licenses

At present the company has a Clean Air License under which they are required to notify the licensing authority of any change in process. A major change would trigger a licence condition review and conditions would be changed if necessary to meet the requirements of the new technology. As the company have not yet obtained their planning consent, it is very unlikely that the notification and license review would be processed before 1 October 1991 by the Department of Health. This notification requirement will then be to the Canterbury Regional Council when it assumes control of the license. For a substantial change they would require a full and public hearing for a new discharge permit.

Discharge permit

There is however a major difficulty within the Resource Management legislation concerning the requirement for a discharge permit for Meadow Mushrooms Prebbleton operations, as two sections of the Act are in conflict. S.385 deems existing clean air licences to be discharge permits, but s.418 allows certain existing uses which discharge contaminants to air to continue without a discharge permit for three years. Meadow Mushrooms has an existing license but also either as "factory farming" or "use of premises for composting organic materials" falls within this latter section.

I understand that the rules of legal interpretation are that when there is a conflict in legislation the specific overrides the general. Therefore Meadow Mushroom's current licence which would have run to 1992 as a discharge permit with a one year extension as granted in s.385, will cease at 1 October 1991.

They would then have three years to apply for a discharge permit under the Resource Management Act. I believe there is little doubt that a discharge permit would eventually be required as the types of compounds such as ammonia which are likely to be produced would be defined as a contaminant in the Resource Management Act, although it is not possible to specify what the permit conditions would be at this stage.

A rule in a regional plan could require a permit before the three years, but this is not a short-term solution as the regional planning process even if commenced immediately is lengthy.

Moreover there are a number of premises such as fish meal plants, rendering plants and composting operations that previously required a clean air licence and will not now need one for three years. I do not believe that it was the intention of the Act that premises that had statutory controls would now for an interim period have no environmental controls. Therefore I will be recommending that a regulation is made under s.360 (g) of the Act to deem licenses on these premises to be discharge permits and exclude these premises from the provisions of s.418.

Land use consent under district plan

I have also considered the situation if the land use consent is heard after 1 October when the new Act applies. Your district scheme becomes the district plan and a specified departure becomes a non-complying activity. It appears that the Council would not be restricted necessarily to "considerations" that are in the plan, when granting consents.

However legal advice is that Council are constrained to consider control of the adverse effects of the activity for which the land use consent is required. The question then is whether any odour is an adverse effect of that activity, or an adverse effect of a discharge from that activity. In the latter case, control of that adverse effect would be the subject of a discharge permit. Using this argument, design and construction of structures could be conditions on the consent and this could cover ventilation and chimneys for example, but acid or wet wash scrubbers to control a discharge such as ammonia seems beyond the scope of the land use control.

With a land use such as composting and new legislation, the conditions that can be imposed and the dividing line between conditions on consents is unclear and obviously has the potential for litigation.

It could also be argued that s.418 gives the company a right to discharge without controls for three years and that that dispensation can not be taken away through another route such as land use consent conditions.

As a mechanism for assessing or imposing odour control requirements, use of the land use consent hearing does not appear as appropriate as a discharge permit hearing.

Abatement notice/enforcement order

The Act provides that if an activity is or is likely to cause an adverse effect on the environment, then the Council can serve an abatement notice. This provision puts the onus on the Council to justify what the effect is that "is or is likely to" need abating. The Act also seems to require that the notice specify what is required to avoid, remedy or mitigate the adverse effect. To serve a notice requires access to information and expertise, some of which may be confidential.

The Council could also apply to the Planning Tribunal for an enforcement order in which case the Tribunal decides if an adverse effect is occurring and needs mitigating. The person or authority "may request" that the enforcement order is made on any terms and conditions specified in the relevant sections, otherwise it is the decision of the Tribunal. Again the Tribunal needs to be provided with information from the applicant for the order.

Both of these methods are intended as a back up system, rather than the major mechanism of the Act for control of adverse effects. They place the Council in the position of having to find information that may be difficult to obtain, and will certainly be costly. As this is new legislation, again there is the potential for extensive litigation.

Conclusion

My conclusion is that given the past history of this case and the uncertainties identified in the legislation, I believe prudent environmental management is necessary. To this end I believe that there are two requirements for resolving the odour problems.

1. The Company would need to install the tunnel composting equipment on a site away from Prebbleton in rural land. The new technology should mean a decreased possibility of nuisance and if a discharge permit is not required for three years there will be time to test the process and control requirements.

   If the new technology successfully controls odour nuisance there will be no need for extra equipment. If there is the occasional nuisance from preassembly piles or the process, it will not be occurring in a residential area and would not extend to the 4-5 km radius experienced under the old technology.

   Costs of this option do not seem to be prohibitive. New buildings are required regardless to house the new technology and transport of compost from site to site occurs already.

   The necessity for relocation of the composting facility to a rural location would be lessened if the company agrees to install equipment to control potential odour emissions from the tunnel houses.

2. The Government needs to improve the statutory provisions for dealing with odour control. The Minister for the Environment should make a regulation under s.360 (g) of the Resource Management Act to remove the anomaly created by s.418 for certain premises that already have Clean Air Licences. This would allow a full and public hearing to proceed on the need for odour controls with the new technology for Meadow Mushrooms, both preassembly piles and tunnel houses.

Recommendations

My recommendations to Selwyn District Council are

(a) note my conclusions
(b) urge the company to continue with their application for planning consent.

I have sighted the legal opinion of Mr Milligan regarding the entitlement to existing use provisions and would support his suggestion that Meadow Mushrooms continue with their application for a planning consent as well as a building permit. This would allow a better assessment of the effects of the proposal and thus a better opportunity to mitigate against the adverse effects of this proposal.

(c) consider seeking the support of the Minister for the Environment for a regulation to save the existing rights and obligations for air pollution control on premises that were previously licensed.

I will be making a similar recommendation in my report when it is tabled in the House.

(d) If such a regulation is made to hold a joint hearing with the Canterbury Regional Council on the planning consent/discharge permit. I note that this may not be possible if the legal requirements necessitate an earlier hearing for the planning consent which is already lodged. This recommendation would also apply if the company decide to apply for a discharge permit under the Resource Management Act.

(e) To facilitate the establishment of a liaison committee between the company and the residents.

Associated with the introduction of this new technology, I believe there is an opportunity to achieve better relations between the Company and the residents. To this end I would urge the Council to encourage the establishment of a liaison committee. This committee should meet regularly and receive data on odour emissions from both the Company and the controlling authority. It should be an avenue for receiving complaints and imparting information from the Company.

I trust that the above information and advice will assist your Council.

Yours sincerely

for Helen R Hughes
Parliamentary Commissioner for the Environment

Copied to: R Young, Meadow Mushrooms Ltd, Prebbleton
B Ayrey, Canterbury Regional Council
D Pullen, Regional Air Pollution Control Officer, DOH, Christchurch