TRAINING - BUILDING RELATIONSHIPS FOR IMPROVED ENVIRONMENTAL OUTCOMES

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ABSTRACT

Compulsory septic tank cleaning, erosion and sediment control, handling household hazardous waste — what do they all have in common?

The proponents of all these projects are regulators who share a commitment to education and training in order to improve environmental outcomes. They see training courses as an essential — and cost-effective — element of a balanced environmental management programme.

But as well as demonstrably achieving improved environmental outcomes, an added benefit of training has been greatly improved working relationships between regulators and operators in these diverse fields — even where enforcement has been stepped up at the same time. These courses build bridges between organisations and the community.

This paper describes the strategic framework of the environmental education programmes into which these training courses fit; shows where training fits into the menu of policy, regulatory, investigative and educational tools for environmental management; and briefly overviews ways of evaluating the cost-effectiveness of training programmes, including detecting unpredicted benefits such as improved relations between regulators and their communities of interest.

KEY WORDS

Environmental education, regulation, training, compliance, strategic, communication, evaluation.

1. INTRODUCTION

Training is a comparatively new tool for environmental regulators, who have traditionally used varying mixes of education and enforcement tools to encourage their target audiences to adopt the desired behaviours.

Training is beginning to be more widely used, but while it can achieve excellent outcomes, like any other tool its success is maximised by careful development of a comprehensive programme in which training is supported by other tools.

This paper looks at three training programmes of two New Zealand regional councils to support their roles as regulators and community educators:

- the Auckland Regional Council's erosion and sediment control training programme (four years old at the time of writing)
- Environment B·O·P's septic tank certifiers' training programme six months old)
- the Auckland Regional Council's household hazardous waste training programme (just begun).

2. EROSION AND SEDIMENT CONTROL

2.1 EROSION AND SEDIMENT CONTROL AS A TRAINING ISSUE

Urban earthworks and other land disturbing activities are widespread in the Auckland region, with up to 200 consent applications received for as much as 1,000 hectares of exposed ground a year.

In the early 1990s, staff of the Auckland Regional Council realised there was a lack of industry awareness of technical standards for erosion and sediment control and started an informal education programme with a couple of annual workshops and regular newsletters. These were well received by the industry.

By June 1995, the continuing increase in the extent of earthworks, poor standards of preparation of consent applications (including erosion and sediment control plans and assessments of environmental effects) and poor site management

indicated the need for a more formal programme of technical training and an Industry Registration and Training Programme was established. In keeping with the philosophy that good environmental management is a responsibility shared between the Council and the community, its objectives were to:

- develop a high professional standard in the erosion and sediment control industry
- equip operators with the skills and motivation to operate voluntarily to that standard
- identify responsible operators on a regular basis
- enable operators to show evidence of their technical ability to meet the erosion and sediment control operating standards
- ultimately, perhaps to create a qualification in erosion and sediment control.

A focus group was set up to help assess the options for upskilling industry, with representatives from Tangata Whenua, consultants, contractors, developers, environmental interest groups and territorial authorities. On the basis of their advice and with their input, a breakfast seminar and two training courses were developed.

The breakfast seminar was aimed at CEO level, to raise awareness of senior managers in the development, consulting and contracting sectors of the need for training so that they would support their staff attending the courses provided.

2.2 TRAINING CONTEXT

The erosion and sediment control training courses are part of an overall strategic framework of complementary policy, regulatory, investigative and educational tools for environmental management.

Policy tools include:

- developing low impact urban design concepts to minimise erosion and sedimentation
- strategic planning, such as input to the Auckland Regional Growth Forum, with the same goal
- input to the regional policy statement, district plans and other statutory documents.

Regulatory tools include:

- a regional plan dealing with sediment control
- consent procedures under the Resource Management Act, including the requirement to prepare erosion and sediment control plans and assess environmental effects, as well as compliance monitoring
- enforcement procedures (abatement notices and prosecutions).

Investigative tools include research such as:

- trialling the efficiency of various erosion, sediment control and revegetation measures
- investigating cumulative effects of sedimentation
- estimating catchment sediment budgets and receiving environment assimilative capacities.

Educational tools which complement the training courses include:

- technical design guidelines
- newsletters
- an annual workshop every September
- leaflets and posters
- attending seminars, displays and conferences
- ongoing dialogue with stakeholders on an as-required basis via the Focus Group members.

All these tools complement each other, with the results of technical investigations being promoted through educational initiatives so as to help consultants and contractors meet statutory requirements more easily.

This effort is all directed towards the same environmental outcome: low impact development focused on avoiding and mitigating adverse environmental effects and, where possible, enhancement of pre-existing environmental quality.

2.3 THE TRAINING PROGRAMME

Two training courses were created to meet the needs of two groups of key players in the field ('plan' in the context below refers to the erosion and sediment control plan which every earthworks site must have):

- plan preparers (consultants), who lodge consent applications, including erosion and sediment control plans and assessments of environment effects, as well as supervising works and instructing contractors (a two-day course)
- plan implementers (contractors), who use the erosion and sediment control plans and construct and maintain on-site works (a one-day course).

Training course objectives were to improve:

- understanding of receiving environments
- understanding of the principles and practices of erosion and sediment control measures
- the standard of preparation and implementation of erosion and sediment control plans
- the standard of assessments of environmental effects of earthworks.

As a result of the above, it was hoped that:

- plan preparers would submit a higher standard of supporting information with applications for earthworks consents
- plan implementers would better understand the importance of a high standard of implementation of erosion and sediment control measures and good attention to detail
- informed dialogue would take place among consultants, contractors and the Auckland

Regional Council to ensure that proposed control measures are always appropriate to changing conditions on site.

Once training materials had been prepared to the Council's satisfaction, they were trialled on the focus group in June 1996, which greatly improved both content and delivery before 'going live'.

2.4 PROGRAMME MILESTONES

Programme milestones are:

- first plan preparers (PPs) course: July 1996
- 157 people have attended 11 PP training courses to May 1999 (40 more are booked over June and July 1999 at the time of writing)
- 115 consultants (73%) have become registered by completing a take-home exercise after the course
- first plan implementers (PIs) training course: August 1996
- 93 people have attended 6 PI training courses to May 1999 (20 more are booked on a July 1999 course at the time of writing)
- 78 contractors (equivalent to 84%) have become registered by completing a take-home exercise after the course
- 82% of those attending all courses rate the content and delivery of the training courses as 4 or 5 out of 5 on a 1 - 5 scale (1 = not impressed; 5 = favourably impressed) in a two-page course evaluation questionnaire collected from all participants.

2.5 PROGRAMME RESULTS

The need for a formal monitoring and evaluation programme of the effectiveness of training and other tools was identified in the early stages of the programme. This has now been put in place and results will start to become available from late 1999.

However, results from some formal and informal surveys of effectiveness of the training in promoting beneficial environmental outcomes are positive.

The effectiveness of the erosion and sediment control programme as perceived by its audiences was surveyed by asking people who attended the 1998 annual workshop to fill out a questionnaire. Key findings were that:

- 90% of the 143 respondents stated they had become more aware of the potential negative impact of sediment in waterways
- this 90% comprised 46% of those respondents who had attended training courses and/or previous annual workshops and 44% of those who had not
- 76% of respondents said they had changed they way they plan or implement erosion and sediment control measures, 53% of these having attended training courses and/or annual workshops and 47% not having attended
- of this 76%, half had changed because of increased knowledge, and half had not attended training courses or workshops.

This survey yielded invaluable findings and will be continued annually. Although it highlights the value of education, it was intended only as a general questionnaire. It was thus unable to compare the relative effectiveness of different educational activities, or the relative effectiveness of educational and other activities such as monitoring, inspection or enforcement.

Staff perception is that understanding of the need for good erosion and sediment control has indeed improved, and that improved compliance monitoring has contributed to better performance as well as training. Sediment loss from earthworks sites has undoubtedly reduced, and catchment-scale mechanisms for improved environmental monitoring to quantify this are being investigated.

Both Auckland Regional Council staff and the industry also report improved relationships, with more open communication and better mutual understanding.

Remarkably, this is despite much more vigorous use of enforcement mechanisms over the last five years. Partly a result of better resourcing, prosecutions are already starting to drop off as industry realise that the council is firmly committed to its erosion and sediment control programme. While there will arguably always be a minimum number of enforcement measures, upskilling industry to meet the standards the Auckland Regional Council expect seems to be effective.

The programme has met with widespread industry approval, with Transit New Zealand and other major developers now requiring consultants and contractors to have on-site at all times a person who has attended an Auckland Regional Council training course. Given that the course is not mandatory, this is a very positive development.

2.6 WHAT NEXT?

No successful programme can stand still. As industry upskills, more specialised training will be needed in core erosion and sediment control techniques and, more importantly, low impact development standards in the wider sense, linking in the related aspects of stormwater management.

Other future developments include:

- a major focus on erosion and sediment control on small sites, working with builders and territorial authority building inspectors

- promoting improved standards of tender specifications which itemise required erosion and sediment control measures for costing
- development of specialist training for quarries, forestry, highways and environmental assessment
- finalisation and promulgation of a Code of Conduct for contractors and consultants based around principles learning in training
- investigating making the course mandatory for all those involved in earthworks, as for example in the State of Maryland
- investigating creating a formal qualification through the New Zealand Qualifications Framework.

The goodwill engendered by progress to date and experience gained so far should ensure positive outcomes from future training initiatives.

3. SEPTIC TANK INSPECTION

3.1 SEPTIC TANK INSPECTION AS A TRAINING ISSUE

Most of the communities without reticulated sewerage in the Bay of Plenty Region are on coastal or lake shores, where if on-site treatment and disposal systems fail, raw or poorly treated effluent gets into waters which are often of high community value and heavily used. Environment B·O·P (the Bay of Plenty Regional Council) investigated the problem in the Bay of Plenty and found evidence that in unsewered communities, there were higher concentrations of nutrients and sewage-borne pathogens in water seeping out of soil into surface waters, in groundwater, streams, drains, stormwater pipes, lakes, coastal waters, sediments, and shellfish.

In light of these findings, the high level of public concern about septic tank effluent and the rapid growth of coastal populations, Environment B·O·P in consultation with key stakeholders put in place its Operative On-Site Effluent Treatment Regional Plan (OSET Plan). The OSET Plan identifies five main causes of system failure and several solutions to the problem, with the aim of ascertaining the nature and extent of on-site system failure in order to indicate appropriate action.

Rule 6.4.4.(a) (i) of the OSET Plan requires every owner of a septic tank in fourteen affected areas (environmental 'hotspots') to apply to Environment B·O·P for a resource consent for a discretionary activity before 1st December 1999 unless before then

- *EITHER* the tank has been surveyed and is subject to a regular maintenance programme, as proven by providing Environment B·O·P with a certificate issued by an approved Certifier that the system is likely to function adequately for the next three years
- *OR* the system has become part of a septic tank survey and regular maintenance programme run by the district council.

The OSET Plan defines a septic tank survey as a survey where all properties containing septic tanks are visited and:

- the tank contents are pumped out
- the structural integrity of the tank is assessed
- the drainfield or soakhole system is assessed.

3.2 TRAINING CONTEXT

The training is consistent with the new Australian/New Zealand Standard 1547, which envisages specific training for those involved in on-site effluent treatment and disposal.

Environment B·O·P's on-site effluent treatment and disposal Certifier training programme is part of a wider public education campaign about on-site disposal systems and how to care for them. It is also part of a data collection programme for environmental monitoring and management.

It fits within the policy, regulatory and investigative context provided by the OSET Plan, and is supplemented by two sets of educational tools; one for the general public and one for the Certifiers themselves. There is also ongoing dialogue with the territorial authorities in whose districts failing systems are located.

For the general public, Environment B·O·P and district councils in the region have been running an information and education strategy to raise public awareness of on-site systems and to give advice to individuals and groups who need it. By way of newspapers, radio items and letter drops, this ongoing strategy informs on-site system users in the affected areas about:

- the new requirements to have their septic tank surveyed, maintained and certified
- the environmental effects of poor waste disposal
- good on-site system design and management
- what proper cleaning out of septic tanks involves
- how to draw up a contract for new or upgraded systems which deals with liability for poor or unsuccessful system design.

For both the public and the Certifiers, two booklets are available, entitled *'Introducing the Operative On-site Effluent Treatment Regional Plan.'* and *'Caring for Your Septic Tank'*. Certifiers must give a copy of the latter to each property owner or occupier after they have finished inspecting their on-site system.

For the Certifiers, Environment B·O·P has made a long term commitment to supporting those who have gone through the training and survey programme. It has undertaken to:

- answer queries on request, including through a free-phone service

- send a bi-monthly newsletter to all the Certifiers
- prepare a fact sheet with the answers to commonly asked questions from septic tank owners for Certifiers to give out to them
- run annual refresher courses where Certifiers will have the opportunity to make presentations and join in discussions
- encourage Certifiers to take every opportunity to make suggestions about areas of improvement in training, refresher courses, the Manual, the Survey Inspection Form and any other aspects of the programme
- involve Certifiers in the forthcoming review of the OSET Plan.

Environment B·O·P is committed to continual improvement of the programme, answer questions and discuss any concerns Certifiers may have about it.

3.3 THE CERTIFICATION PROGRAMME

Environment B·O·P has taken on responsibility for approving Certifiers by setting up a training course for them. The course was promoted by newspaper advertisements and direct mail to people working in the area of on-site effluent treatment and disposal system installation and maintenance.

The workshop and inspection process has been supported by a Septic Tank Certification Manual which provides a 'how to' for certified septic tank inspectors to carry out site inspections.

The training course recognises the expertise of those attending: rather than aiming at technical upskilling, it focuses on familiarising trainees with a detailed Inspection and Survey Form so they can complete it accurately enough to meet Environment B·O·P's information needs. The Certification Manual highlights:

- what to look for when inspecting a septic tank and the performance of the effluent disposal system
- how to score the system using demerit points
- what to do when giving a pass or a fail to an on-site treatment and disposal system
- how to tell Environment B·O·P and the owner about the condition of the tank, how well the system is working and whether it passed or failed.

The responsibility of Certifiers to Environment B·O·P ends when they tell the owner or occupier whether their on-site system has passed or failed and sent the completed Inspection and Survey Form and the $37:50 fee collected from the property owner to Environment B·O·P. Environment B·O·P then issues owners with a Certificate of Compliance for systems which have passed the inspection.

It is made clear to Certifiers that if a system fails, they do not have to enforce the OSET Plan's requirement for owners or occupiers to upgrade: they are not policemen, only information gatherers.

Responsibility for action lies with Environment B·O·P once the Certifiers have forwarded the information.

However, Certifiers may be asked for advice about how the system can be upgraded in order to obtain a Certificate of Compliance, in which case they need to make sure their advice accurately reflects the requirements of the OSET Plan as outlined in a booklet '*Introducing the Operative On-Site Effluent Treatment Regional Plan.*'

The programme is essentially a partnership between Environment B·O·P and the Certifiers. They are in the business of installing on-site systems and/or desludging septic tanks, while Environment B·O·P needs to know which systems are being looked after and are working effectively and which are not.

3.4 PROGRAMME MILESTONES

Three training course have been run, with two in December 1998 and one in April 1999. Altogether, 38 people have attended, of whom 30 have become Certified. More courses will be held on demand.

Feedback on the training courses has been extremely favourable, with 87% of responses rating course content and delivery 4 or 5 out of a scale of 1 to 5 (1 = not impressed; 5 = favourably impressed).

This is all the more remarkable given that although most operators were receptive to the idea in spite of the many unknowns it held for them, there was serious scepticism and concern in some quarters about the septic tank inspection programme's validity and viability. Feedback since the courses were run has indicated that these concerns have abated in light of the practical success of the Inspection and Survey Form and the ongoing support offered by Environment B·O·P staff to those using it. This support is very important.

3.5 PROGRAMME RESULTS

This is a new programme, so long term results are not yet available. However, there are some anticipated results and some progress has already been made.

Anticipated results include:

- increased business and guaranteed repeat business for Certifiers as more regular maintenance of on-site systems is carried out
- correctly operating on-site systems sized appropriately for their loadings
- safer, more hygienic on-site systems and healthier local environments for homeowners

- a cost-effective way of ensuring district councils meet their obligations to protect public health
- deferral or avoidance of the cost of sewering some communities
- healthier drinking and recreational waters and shellfish that are safer to eat.

About 400 of an estimated 2,500 septic tanks in the 14 'hotspot' communities have been inspected under the maintenance programme at the time of writing. Of the 400 tanks inspected so far, 55% have failed. Results show that a significant number of tanks are failing because they are smaller than the 2,700 litres required by the New Zealand Standard NZ 4610: 1982 for septic tanks. This has been adopted by Environment B·O·P's OSET plan as the minimum tank size irrespective of the size of the house (with the plan review, this may be increased to the 3,000 litres specified in the new Australian/New Zealand Standard). The smallest septic tank that has been found so far had a volume of 440 litres for a six-bedroom dwelling: under the OSET plan the minimum for that house should be 3,300 litres.

Generally those septic tank systems that have scored twenty or more demerit points are in need of urgent upgrade (five demerits fail a system and the maximum number of demerits is 52). At a 20+ demerit-point system at Omokoroa, Tauranga, the septic tank was opened for cleaning and inspection and found to be empty of liquid despite the fact that the family of three had just completed a load of washing. The Certifier found that the tank had no base, and dye-tracing showed the dye appeared in the harbour eight minutes after entering the tank. Other systems that have scored twenty or more demerit points failed because they were located under swimming pools, driveways and buildings. Such systems cannot be properly maintained and because the disposal field is under sealed surfaces, cannot operate efficiently. Some tanks appear to have been constructed using pumice bricks or cement with incorrect quantities of aggregate. Over time, these tanks have deteriorated to such an extent that they are often found with holes in the walls and base. In addition, a number of septic tanks located around coastal and lake margins (where the water table is high) have been constructed without bases or with holes in the walls as a means of ensuring that the tank stays in the ground when the water table rises.

The data collected so far shows that over 40% of disposal systems involve soak holes and over 50% involve soakage trench systems. 10% of systems used 'other disposal methods' or were unable to be located (an automatic fail).

Purchasers of property in the 14 'hotspot' communities are now requesting a certificate of compliance from vendors as a condition of sale. Where septic tank systems have failed the inspection programme, Environment B·O·P has provided direction on what remedial works are required to bring tanks up to the standard outlined in the OSET plan.

Draft policy is that in areas where reticulation is planned in the next four to five years, only those systems that are totally unsatisfactory (five or more demerit points) will be required to upgrade. In areas where no reticulation is planned, upgrade of systems to Environment B·O·P standards will be required. This policy will be regularly reviewed as information comes to hand.

This link back to 'real world' action emphasises the importance of quality training: Environment B·O·P needs accurate, consistent data in order to realistically assess the real extent of problems in order to take appropriate action.

As well as effecting a much-needed raising of public awareness of on-site effluent systems, the programme as a whole is undoubtedly positively affecting environmental outcomes.

Relations between Environment B·O·P and the Certifier community have also already improved as a result of the willingness of Council staff to take on board suggestions and act on them. As the programme matures, improved relations will be very likely to extend more widely into the community provided communication is actively maintained.

3.6 WHAT NEXT?

The training programme is still very young and it is hard to predict what demands it will need to meet in future. However, there are some interesting possible future prospects, including:

- growing pressure from the Certifier community themselves for improved standards of design, installation and maintenance of on-site systems, including higher and more consistent criteria for inspection and approval by territorial authorities and improved training by ITOs (Industry Training Organisations)
- pressure for provision by territorial authorities or entrepreneurs of environmentally sound and cost-effective community systems for disposal of septage (the sludge removed from tanks)
- development of more detailed inspection and maintenance standards, including better provision for the health and safety of inspectors.

These and other suggestions have originated from those attending Certifier training courses. There is tremendous potential for positive

developments to arise from this programme provided commitment can be maintained by both parties, but particularly by Environment B·O·P as the prime instigator and driver.

4. HANDLING HOUSEHOLD HAZARDOUS WASTE

4.1 HOUSEHOLD HAZARDOUS WASTE AS A TRAINING ISSUE

In the past, the Auckland Regional Council had an informal arrangement with transfer station operators that they would accept some hazardous wastes for collection and disposal or storage pending development of a disposal solution. A couple of years ago, the Auckland Regional Council reviewed the situation and rather than run the risk of either party pulling out of this difficult area with the result that hazardous waste would 'fall through the cracks', identified a need to formalise arrangements.

As a result of the contractual arrangements put in place to formalise responsibilities, the Auckland Regional Council undertook to fund a free and confidential receipt and disposal service at refuse transfer stations for small quantities of household hazardous waste. The Council also undertook to provide transfer station operators with:

- guidance on site layout which meets regulatory requirements and facilitates safe receipt, processing and disposal of household hazardous waste
- protocols for safe receipt, processing and disposal
- minimum record-keeping requirements
- training courses for transfer station staff dealing with household hazardous waste.

4.2 TRAINING CONTEXT

In this situation, the Auckland Regional Council is less a regulator than a party to a contractual arrangement of convenience to both sides.

The Auckland Regional Council's ability to take a strong lead in managing hazardous waste is hampered by the absence of national mechanisms for effective management of hazardous waste and the lack of direct statutory controls available to it. In providing household hazardous waste reception facilities at transfer stations and training transfer station staff, the Council is thus attempting to meet a need in an area over which it has, at best, indirect control. In the meantime, more effective regulatory tools await government action now under way. Investigation into alternatives to common household hazardous substances and effective disposal systems is dependent on the market.

Educational tools are the only available alternatives, and the Council has made a good start, with the support and co-operation of transfer station owners and operators. Essentially, transfer stations provide an opportunity for educating the public about household hazardous waste. Training transfer station staff in safe handling and disposal of these wastes enables them to inform the public on the Council's behalf. This is an effective means of outreach which is also supplemented by a broader range of education tools directly aimed at the general public themselves.

4.3 THE TRAINING PROGRAMME

A one-day practical workshop training course was developed for refuse transfer station staff to ensure that they become familiar with:

- what 'hazardous' means
- the hazardous properties of common household hazardous wastes, including which ones are incompatible and should not be stored together, and which ones cannot be accepted
- how to identify unlabeled household hazardous waste
- personal protective equipment, safe handling and recontainment
- what to do in an emergency
- working with the public, including difficult people (for example, members of the public with hazardous waste that cannot be accepted, or people wishing to dispose of commercial quantities of hazardous waste).

4.4 PROGRAMME MILESTONES

Two workshops were run in November 1998, with 32 people attending and 16 people being issued with certificates as a result of completing a take-home exercise.

Feedback on the workshops was extremely favourable, with 91% of responses rating course content and delivery 4 or 5 out of a scale of 1 to 5 (1 = not impressed; 5 = favourably impressed).

No further courses are scheduled at present, though a six-monthly training follow up visit was due at the time of writing.

4.5 PROGRAMME RESULTS

Observed benefits of the programme as a whole (it is difficult to separate out the effects of the training alone, for this programme) include:

- separating more household hazardous waste from the general domestic waste stream
- reduced risk to human health and safety and the environment by improved handling procedures at the transfer stations

- improved recontainment and storage for the company ultimately responsible for collecting, treating or storing the collected wastes, with the resulting safety and environmental benefits
- reduced liability for the Council and the transfer station operators
- improved public awareness of household hazardous wastes
- very positive reception by territorial councils, who are now promoting the scheme and thereby adding to its educational outreach
- added job satisfaction for Council and transfer station staff in effecting practical and positive change
- much improved working relationships between transfer station operators and the Council.

4.6 WHAT NEXT?

Due to pressure of other work, the training workshops have so far been unsupported by other training tools and follow up. However, some clear needs have been identified, especially for on-site refresher training, which at the time of writing is scheduled for the near future. A newsletter is also proposed, but regular personal contact by visiting the transfer stations seems likely to be the best way of building rapport with staff and raising their skills and levels of awareness. The small number of sites and staff involved makes this a feasible and effective option.

5. SUMMARY

To sum up the three training programmes described, it might be said that one is up and running, one is starting to take strides and one is still learning to walk. That is, the longest-running programme is, as would be expected, the one with the most diverse mix of policy, regulatory, investigative and educational tools supporting the training courses themselves.

There is also a continuum of control. The erosion and sediment control programme lies in a context where the regulator has direct statutory control over the operators being trained because they must apply for and/or comply with resource consents. The septic tank inspection programme lies in a context of direct statutory control via a regional plan in that all householders must either apply for a resource consent or get their on-site system inspected. However, it is the inspectors not the householders who are being trained, and their role is reporting performance not enforcing compliance, thus the regulator is effectively one step removed from direct intervention. The household hazardous waste training programme has a still weaker link with its trainees: they are employed by private organisations with no real mandate for handling household hazardous waste. They support separating these wastes because it is in their interests to keep them out of their landfills in order to comply with conditions on their resource consents, but it is notoriously difficult to police householders' waste disposal or, indeed, whether or not hazardous waste is illegally co-disposed into landfills with other materials.

However, in all cases, measurable environmental outcomes result from training.

The training in all three courses was developed by training providers (environmental professionals who have undertaken varying degrees of 'train the trainer' training). Content and delivery was in all cases developed in close consultation with and to the quality specified by the regulators. Training in all cases was delivered by the training providers with varying degrees of participation from the regulators, sometimes also with appearances by other environmental professionals without training as trainers.

Training course development was funded on the basis of two models; in one, course preparation is funded by the training provider, who then may use the material elsewhere; in the other, course preparation is funded by the client, who then owns the material.

Training is in all cases provided on the basis of an applied 'learning by doing' model, with practical field work where ever possible. If not possible on training courses themselves (which are often constrained by the limited time people can spare from their work to undergo training), a field component can be built in to annual refresher courses or informal workshops.

Providing and maintaining high training standards is achieved by working closely with clients, using 'dummy runs', obtaining feedback from trainees, and debriefing after every training course, either formally or informally, with all necessary amendments made to subsequent training courses.

Also being looked at it for quality assurance is benchmarking with similar training courses overseas (erosion and sediment control and household hazardous waste) and elsewhere in New Zealand (septic tanks).

All courses have resulted in noticeably improved relations between regulators and their communities of interest, roughly in proportion to their duration.

Overall, the success of each programme reflects its longevity and the commitment by the regulators and the trainees to the larger programme of which training forms just a part. Factors contributing to success are examined next.

6. ELEMENTS OF A SUCCESSFUL TRAINING PROGRAMME

6.1 STRATEGIC ELEMENTS

The key elements of success are time, energy and commitment. These are all linked:

- time: how long the programme has been running
- energy: how much effort the training provider puts into the training and related programmes
- commitment: how much the training provider and the trainees believe in the programme goals and in each others' commitment to them, as well as the degree of budgetary commitment.

Other factors that promote the success of a training programme include:

- an agreed environmental issue
- clearly defined training objectives and methods
- a target audience able to directly affect the issue
- a regulator with direct control over the issue
- a clear benefit to those attending, whether in fewer 'Section 92' letters, improved environmental compliance, more business, better health and safety or some other demonstrable gain
- a clear environmental and community benefit.

A well-planned education programme will also take a strategic approach which:

- ensures that educational priorities match statutory and technical priorities
- has clear, measurable objectives
- establishes ongoing evaluation of the effectiveness of educational activities in the workplace to ensure that educational activities enhance statutory and technical outcomes.

6.2 PROGRAMME ELEMENTS

Factors observed to have contributed to successful training outcomes include:

- a training approach which recognises and builds on trainees' existing skills and experience
- trainers with technical credibility able to deliver training to a high professional standard
- a relaxed, informal and interactive learning environment
- an emphasis on practical activities - people learn by doing - including a field component
- a context where people take responsibility for their own learning, by working in small groups and reporting back to the group as a whole
- regulatory staff attending every course: many people comment on how good it is to put a name to a face and to get to know Council staff in an informal context
- regular feedback and evaluation, with review of content and delivery as indicated
- pre-course preparation and post-course follow up.

Factors being considered which may further enhance training outcomes include:

- improved links to job descriptions, performance evaluation and staff management within organisations sending staff to courses
- benchmarking with similar training courses overseas and elsewhere in New Zealand
- working with industry training organisations and the New Zealand Qualifications Framework to create an educated workforce and allow people to have their course attendance formally recognised if they are doing relevant study
- accreditation of training providers by the New Zealand Qualifications Authority
- computer-based and distance learning
- ensuring that people who help with training also do some minimum 'train the trainer' courses.

6.3 SUPPORTING ELEMENTS

Setting up a training course means you are making a commitment to an ongoing relationship with your trainees and their source community of interest. This relationship must be fostered in order to derive the full benefit of a training programme. Ongoing two-way communication can be established and fostered in many ways, including:

- six-month training follow up
- regular newsletters
- refresher courses
- focus groups representing relevant interests
- posters, leaflets and other interesting ways of distributing relevant information
- annual workshops, preferably held on the field with a social function at the end (sponsored displays are a way of funding refreshments)
- specialist training opportunities
- feedback from and working with training participants and stakeholders
- ongoing evaluation and improvement of all these.

6.4 ISSUES

Some of the pitfalls we have encountered include:

- literacy: 40% of New Zealand workers are below the international minimum level of literacy required for everyday life and work, and about 14% would struggle with even the most basic printed material (OECD, cited in

Burge, 1998) and an estimated 20% of New Zealanders are almost fully illiterate. This needs very delicate handling, but employers who provide or help staff with literacy training reap huge rewards in loyalty and productivity

- training experience: the goodwill of trainees to trainers goes a long way, but there are also simple skills that can be taught to untrained presenters, and these should be insisted upon to maximise learning uptake
- failure of Council staff to attend courses: for a period, it was thought that once the Auckland Regional Council's training courses were 'up and running', Council staff time would be freed up from attendance, but both trainers and the trainees separately requested their return. As indicated above, this has been resoundingly beneficial for both the perceived credibility of the course and for trainees in building personal relationships with regulators
- pitching training at the right level for the audience: courses must be tailored in detail to meet the learning needs and learning styles of different audiences. An academic approach suits very few people (even academics!).

7. MEASURING THE EFFECTIVENESS OF ENVIRONMENTAL EDUCATION

As with any other tool, the cost-effectiveness of training needs to be monitored and evaluated. The success of a training programme can be evaluated in several ways:

- the effectiveness of the training courses and related initiatives in changing behaviours
- measured improvement in the environmental outcomes of concern
- the cost-effectiveness of other measures, such as enforcement alone.

The best way of developing effective evaluation is to set *SMARTER* objectives:

- *specific* to the programme, activity, target group, issue or goal
- *measurable,* enabling effective evaluation
- *achievable,* in terms of the size of the problem, how it is defined and known information
- *realistic,* given limitations of time and resources
- *time-bound,* to enable progress to be measured against agreed time frames
- *endorsed* - supported by staff and managers
- *relevant* to the Section's functions, programmes and objectives, yielding a real benefit to staff in ease of work and work load.

The resultant measures of success should thus:

- indicate progress towards desired outcomes (goals and objectives)
- be simple and easy to use, providing useful information in a cost effective manner
- generate data bases that readily allow analysis and interpretation, especially of trends.

Three levels of measurement are recommended by the International Committee of Public Relations Consultancies Associations (1997):

- output - what you produce
- out-take - what your target audience notices
- outcome - how much what you produce actually changes people's behaviours - including, in the environmental arena, directly measurable environmental outcomes.

Two or three empirical measures are better than five or six vague ones, although an overview of general impressions, including synergies and confounding factors, is also needed in an evaluation.

Specific time must also be allocated in budgets and timetables for evaluation. The pressure of statutory demands often means evaluation is not done, yet it is essential for ensuring that education spending is cost-effective.

At least 5% of project time should be allocated to evaluation, and preferably 10% (Paine, 1999).

Evaluation must be carried out every year as part of budget preparation, to ensure that activities are continued and/or new ones introduced for rational and defensible reasons.

Annual calendar dates for managing and evaluating training thus include routine monthly reporting as well as major budget milestones.

8. SUMMARY AND CONCLUSIONS

The Conference title is 'Valuing our environment — dollars and sense'. One of the themes for educational papers was to look at investments and benefits. In these terms, high quality training programmes run by regulators to upskill key target audiences more than pay off.

Regulators are increasingly aware that it is pointless trying to achieve environmental outcomes by regulation alone. Giving people the skills and motivation to do the right thing, combined with positive monitoring and help to make sure they are doing it, is a much more cost-effective tool.

There are likely to be many areas of environmental management and regulation where similar benefits could be experienced by making a long term commitment to training.

Good training courses build relationships - and better environmental outcomes.

REFERENCES

Paine, Katie. (1999) In Karen Scherer: 'Market the event - then evaluate your success says industry guru'. *NZ Herald*, 11 Feb 1999.

The International Committee of Public Relations Consultancies Associations (ICO). (1997). How to get real value from public relations: a client guide to designing measurable communications objectives.

Ministry for the Environment. (1994). Issues, Objectives, Policies, Methods and Results under the Resource Management Act. Working Paper 1, July 1994.

Burge, Karen. (1998) 'Schemes come to grips with literacy'. *NZ Herald,* 4 Dec 1998.