PRACTICAL DIFFICULTIES IN PROSECUTING ENVIRONMENTAL OFFENDERS

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IN RECENT YEARS THERE HAS BEEN A TREND TOWARDS THE USE OF criminal sanctions against environmental offenders (Hemming 1992). Guilt must be proven beyond reasonable doubt. Sufficient and appropriate evidence is required but often prosecutions are dismissed because of inadequacies in evidence rather than the innocence of the accused (McCotter 1992).

There may be practical difficulties in collecting evidence of an environmental offence because of the time and nature of the offence, problems of access and inclement weather. Frequently, however, the wrong type or insufficient evidence is collected even when there is ample opportunity to collect adequate information. This often reflects a poor understanding of criminal proceedings on the part of control authorities.

This paper explores the practical difficulties of obtaining environmental evidence and then of using it to prosecute environmental offenders.

Hearsay Evidence

The nature of most environmental offences is that unless the offender is caught in the act it is difficult to prove beyond reasonable doubt that it was the accused who committed the offence.

This is particularly the case with noise offences because they have no residual effect. Once the noise emission ceases there may be no evidence that it ever took place. Where noise pollution breaches regularly occur, it is possible to set up noise loggers to record offences. But without an independent expert present at the time of recording it is impossible to prove what made the noise. Tape recorders can be set up to record when noise levels exceed a prescribed threshold but this is not always reliable or practical.

An acoustic consultant or a control authority inspector can be on call where repeat offences are anticipated. Even so, they often arrive too late to collect evidence. Isolated incidents are usually only reported if they occur at night or outside permitted operating hours. This, too, is usually outside control authority work hours and cannot be acted upon.

Even offences which leave lingering evidence are difficult to prove beyond reasonable doubt unless their occurrence has been witnessed. In these cases it is a matter of demonstrating that the pollution could not have possibly come from any other source. Most sediment, organic matter, odours and gases could be attributed to more than one source. It is only where the pollution contains a "fingerprint", a particular chemical which only the accused could have released, that this difficulty is overcome.

A further related difficulty is determining the duration of an offence. This is particularly relevant where it is necessary to prove that the offence harmed the environment. It is often difficult, if not impossible, to determine how long a pollutant was released prior to it being observed.

Data Collection

A pollution emission usually has to be measured in some way to prove that it falls within the definition of pollution and/or that it is harmful to the environment. The way in which this evidence is collected and used is crucial to successful prosecution. The person responsible for gathering it needs not only to understand the technical aspects of the sampling and the environmental impacts of the pollution but also needs to know how the evidence is going to be used and scrutinised in criminal proceedings.

Such evidence is open to challenge in the areas of sampling, storing, testing and interpretation.

Sampling

Technique

Samples must be collected using appropriate procedures and equipment but frequently they are not. There are usually, although not always, published standards for sampling. For example, *Australian Standard AS 2031-1986 Selection of Containers and Preservation of Water Samples for Chemical and Microbiological Analysis* (Standards Association of Australia 1986) sets out requirements for water samples. For various water quality parameters, it specifies whether sampling containers should be opaque or clear, glass or plastic, rinsed or sterilised. The standards should be followed because dirt, bacteria, light and even the material of the container itself can change the characteristics of the samples.

There are no similar standards for water sample collection methods but an adequate record of technique should be kept to prove that extraneous matter such as floating insects or bottom sediment has been excluded from the sample.

In the case of noise and air pollution, electronic equipment is used to take measurements directly. The reliability of measurements can be questioned if non-standard equipment is used or the equipment is not calibrated before and after measuring.

Location

Not only can poor technique and incorrect equipment devalue evidence but so can sampling locations. Sampling in the wrong location can raise the possibility of another party or mechanism being responsible for the pollution.

Air and water discharges should be sampled as close to the source as possible. Too often water samples are collected hundreds of metres from the discharge point. Other discharges or the ingress of contaminants between the discharge point and the sampling point then becomes a possibility which cannot be overlooked by a court.

It is not always possible to gain access to the discharge point because it might be in a small drain or sewer. Frequently, however, samples are collected at remote locations for no good reason. It can be, and often is argued, that what has been measured is someone else's pollution.

Samples should also be collected just upstream and just downstream of the discharge point to give an indication of the effect of the discharge on the receiving waters. Collection points need to be close enough to ensure that there are no other potential discharges entering between the sampling locations but also far enough downstream to ensure that the discharge and receiving waters are sufficiently mixed.

Noise measurements can often be corrupted by extraneous sources such as wind in trees or traffic noise. A monitoring location free from these effects should be chosen. Traffic can also have a significant effect on air quality measurements and unless a suitable sampling point has been chosen doubts can be cast upon test results.

Ambient conditions

It is rarely sufficient to simply sample or measure pollution. For evidence to be properly interpreted, and in many cases validated, it is essential to have information about ambient conditions.

Water pollution is measured as a concentration of pollutant in a sample but if some simple flow rate estimates are also made in the field then the evidence is far more useful. Most importantly, pollution concentrations plus flow rate estimates from the discharge point, and upstream and downstream sampling points enable a mass balance calculation to be carried out. The total quantity of pollution can be estimated and it may be possible to establish beyond reasonable doubt that the accused was solely responsible for the pollution of the receiving waters. It is remarkable how frequently such simple estimates are overlooked.

Such information also helps to assess the degree of harm which has been done to the environment. If the pollution can be traced as far downstream as possible then the distance from the source and the velocity of the flow will indicate a minimum duration for the pollution event. Combined with concentration and flow rate it can be used to estimate the total pollutant discharge.

Ambient weather conditions are also important in interpreting results and assessing environmental harm. Rainfall can affect the quality of natural receiving waters, increase the probability of other pollutants entering the system between sampling points, and dilute pollution effects. A simple observation as to whether or not it is raining at the time of sampling is helpful but often overlooked.

It is difficult, however, to get better rainfall information because rainfall varies considerably over time and space. Most official rainfall data is of total rain over a 24-hour period and usually at some location remote from the area in question.

Wind speed and direction and the presence of temperature inversions are important in the assessment of air and noise pollution. Most pollution licences apply under neutral weather conditions which means low wind speeds and the absence of temperature inversions. Stronger wind and temperature inversions can both refract noise and cause it to be louder than it would be at the same point under neutral conditions. Wind will increase the dispersion of air pollution but inversions can inhibit its dispersion.

In proving that pollution licence conditions have been breached it is necessary to assess whether neutral weather conditions occurred at the time. One practical difficulty in doing this is that most pollution measurements are taken at ground level. If the source is above ground there can be significant differences between wind speeds at the source and at the point of measurement. Another difficulty is determining whether or not a temperature inversion is present. It often cannot be determined rigorously without flying a weather balloon.

Storage

Sample storage arrangements are particularly pertinent to water samples. Standard procedures must be followed otherwise temperature, light or simply elapsed time can cause chemical or biological activity which will alter water quality between collection and testing.

Biological parameters should preferably be tested within six hours of sampling and most other parameters within 24 hours. Most samples should be refrigerated. This is often overlooked through carelessness. It is not unusual for samples to be carried around in the field in someone's sweaty hands and then left in a car in the sun. When they are finally taken to the laboratory more than 24 hours may elapse before they are tested. The validity of pollution evidence collected under such circumstances can be seriously questioned.

Often the travel time between the field and laboratory, and the laboratory's office hours and workload are practical limitations to testing samples within the required time frame. Yet even when everything has been done correctly the evidence can still be challenged if there is an inadequate record of procedures and times.

It may also be necessary to demonstrate that there is no possibility of samples having been swapped or confused, or deliberately or accidentally tampered with between collection and testing. This may mean tamper-proof sealing of sample bottles, locking of refrigerators and accurate recording of sample handling by each person involved from collection to testing.

Evidence can lack credibility if these things are overlooked but it frequently happens because those responsible do not anticipate how evidence may be challenged in court.

Testing

Once samples reach a laboratory there are standard testing procedures which need to be followed. It is prudent to use a NATA (National Association of Testing Authorities)

registered laboratory. Registration involves meeting standards for equipment, staff training and analytical procedures. However, registration is a safeguard and not a guarantee that test results will be free of errors.

It is not unusual, particularly when a laboratory is busy, for technicians to take short cuts in testing procedures. For 99 per cent of their work this does not affect the usefulness of the results yet it is a point at which evidence could be challenged.

Even if procedures have been strictly followed there may be insufficient record to demonstrate that this was indeed the case. It is most unlikely that any technician can be relied upon to distinctly recall testing a particular set of samples. For this reason, an adequate written record is invaluable. Accurate procedural records are also essential to eliminate doubts about sample substitution, sample contamination or equipment calibration.

Interpretation

The first step in interpretation is to see whether all of the evidence makes sense. This may seem obvious but can be overlooked. Such checks can pick up the presence of extraneous pollution sources, sample substitutions, procedural errors or calculation errors. If these errors are not found before evidence is presented to a court, the credibility of expert witnesses and any evidence they present may be undermined.

Another important part of interpretation is understanding the nature of the environment which has been polluted. This is important in establishing whether harm has been caused and in determining the appropriate penalty for the offence. It is remarkable how often interpretation of impact is based upon textbook information rather than inspection of the impacted environment. It is not unusual for evidence to be presented on how water pollution would affect aquatic vegetation, fish and benthos without any evidence that these organisms were actually present in the receiving waters. They may have been present further downstream but it would need to be demonstrated that the pollutants were still of sufficiently high concentration to cause harm at that location. This highlights the need to sample at appropriate locations and observe ambient conditions.

But what are ambient conditions? Are they the conditions which were occurring at the time of the offence or are they the range of conditions to which that environment is likely to be subjected? This may be an issue where the environment is not pristine and is subject to pollution from many sources. For example, a water discharge may have higher concentrations of sediment than the receiving waters at one time but those same waters may have considerably higher sediment concentrations after rain and in the absence of the discharge. In such circumstances it is questionable whether the discharge could be deemed to have harmed the environment and it could possibly be argued that the discharge is not in fact pollution. The practical difficulty in arguing such a point is being able to obtain the necessary water quality records to support or refute it.

Conclusion

There are numerous practical difficulties in prosecuting environmental offenders. Many arise from the need to gather evidence that will satisfy a criminal standard of proof. Often

the time of the offence or physical constraints prevent suitable evidence being gathered. However, a poor appreciation of how evidence will be used can lead to inadequate or questionable evidence being collected and incorrect conclusions being drawn. This is a practical difficulty which needs to be addressed by control authorities.

References

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