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Article abstract

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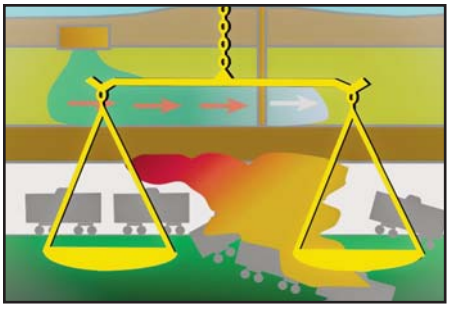
PROFESSIONAL AFFAIRS



Legal and Ethical Responsibilities of Geoscientists in Environmental Geology[1]

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SUMMARY
Professional geoscientists, including those practicing environmental geoscience, have definite and definable legal and ethical responsibilities. These obligations apply to environmental geoscientists working as consultants, academics, regulators or environmental managers. Environmental geoscientists are obliged to be aware of and obey all federal, provincial and municipal laws and regulations applying to professional geoscientists. As well as the provincial engineering and geoscience acts, a variety of additional guidelines and professional standards apply to the professional geoscientist. These include criminal, labour, and business law as well as environmental acts and regulations. Governments, professional associations and private standards agencies, such as the Canadian Standards Association and the American Society for Testing and Materials, have also issued relevant guidelines and standards.

SOMMAIRE
Les géoscientifiques professionnels, incluant ceux qui pratiquent en géosciences de l'environnement, ont des responsabilités légales et éthiques définies et définissables. Ces obligations s'appliquent aux géoscientifiques de l'environnement qu'ils travaillent comme experts-conseils, universitaires, ou pour des organismes de réglementation ou comme gestionnaires en environnement. Les géoscientifiques en environnement sont tenus de connaître et de respecter toutes les lois et règlements fédéraux, provinciaux et municipaux applicables aux géoscientifiques professionnels. En plus des lois provinciales régissant la pratique des ingénieurs et des géoscientifiques, les géoscientifiques doivent aussi se soumettre à une variété de lignes directrices et de normes supplémentaires touchant leur pratique. Ces dernières concernent notamment les champs du droit pénal, du droit du travail, le droit des affaires ainsi que les lois et règlements en environnement. Les gouvernements, les associations professionnelles et les organismes privés de normalisation, comme l'Association canadienne de normalisation et l'*American Society for Testing and Materials*, ont également édicté des lignes directrices et des normes pertinentes.

INTRODUCTION
Environmental Geoscientists are mostly found in four areas of employment:
- as consultants in private industry
- as environmental managers
- as academic researchers, and
- as regulators and civil servants.

Private industry and government retain environmental geoscientists as consultants to conduct environmental assessments and determine the environmental liability on a property. They often are responsible for undertaking work such as conducting environmental site assessments, directing the clean-up of contaminated sites, identifying and assessing new groundwater supplies, and designing and evaluating groundwater monitoring programs. In addition to their direct services to their clients, the findings and recommendations of consultants can have significant financial and environmental implications for the public since these findings are relied upon by regulators and other decision makers. Overall, these consultants are in the business of providing scientific services for their

[1] *Please note that nothing in this paper is to be taken as legal advice. The references to statutes and regulations are for illustrative purposes only as part of the paper's narrative. Geoscientists are encouraged to study and understand the relevant statutes and regulations that apply to the jurisdiction(s) they are working in and seek the advice of legal counsel where necessary.*

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clients and ultimately the public.

Many geoscientists are employed as environmental managers in both industry and government. They are responsible for managing the organization's environmental liabilities, overseeing monitoring and clean-up projects, and ensuring compliance with environmental regulations. They can be seen as scientists with specific responsibilities for environmental management.

Academic environmental geoscientists are engaged in conducting research, educating geoscience students and contributing to the science upon which the profession is built. In order to conduct research, academics must secure funding and grants from various stakeholders in government and/or industry. They can be seen as scientists and educators who may also engage in some business activities.

Environmental geoscientists who are regulators and civil servants are charged with developing and enforcing environmental laws. For most of the time, environmental geoscientists who work as regulators aim to mitigate environmental risks and achieve compliance with the regulations through consultation and education. However, enforcement of the law through prosecutions is sometimes necessary.

LEGAL AND ETHICAL RESPONSIBILITES

In civilized societies we have laws and regulations for the practical purpose of protecting the rights and safety of individuals as well as maintaining public order. As trusted professionals, geoscientists have responsibilities that follow from our professional status. These responsibilities include:

- Obedience to the Law;
- Compliance with Professional Code of Ethics;
- Duty to the public, and;
- A duty to employ your best professional judgement.

However, in practice, people can make bad decisions and things can go wrong. The following outlines some of the areas of unethical practice that professional geoscientists ought to be aware of and avoid:

1. **Fraud and misrepresentation:** this can include a number of illegal and unethical practices such as:
   - Creative accounting - a person may wish to show a profit where none exists.
   - Deliberate misinformation in order to mislead regulators, business associates and competitors.
   - Hiding uncomfortable facts or findings**,** a client may not want to admit to the full extent environmental liability and the consultant complies to keep the business.
2. **Bad labour practices:**: examples include treating employees in an abusive manner, not paying promised wages and ignoring good workplace safety practices.
3. **Personal disputes:** slander, libel and violence.
4. **Bribery and kickbacks:** consultants may be tempted to get an edge on the competition by 'greasing the wheels.' In some parts of the world, bribes and kickbacks are expected and considered acceptable as part of conducting business. In Canada, they are offences.
5. **Trespass:** entering a property without the owner's permission is considered trespass, with only a few exceptions.
6. **Overzealous enforcement of the law:** regulators can only enforce the law as it is written and must abide by rules of evidence.

REGULATIONS, CODES AND STANDARDS

In addition to technical/scientific knowledge, professional geoscientists must also be aware of the relevant laws that apply in all jurisdictions in which they work. The following examples, mostly from Manitoba, illustrate the many laws, regulations, codes and standards that environmental geoscientists ought to be aware of.

Criminal Law

Like everyone else, geoscientists are subject to criminal law. Unethical practices that are offences under the *Criminal Code of Canada* (R.S.C., 1985, c. C-46) and that environmental geoscientists must avoid include:

- Fraud and misrepresentation (Section 380, *Criminal Code*)
- Slander and libel (Section 297, *Criminal Code*)
- Bribery (Sections 119 and 120, *Criminal Code*)
- Kickbacks (Section 426, *Criminal Code*)
- Not preventing unsafe workplace conditions (Section 217.1, *Criminal Code*)

Section 217.1 of the *Criminal Code* overlaps labour law (see below)

A very common problem facing environmental geoscientists is access to a property to gain information. If a geoscientist does not have explicit permission to enter a property to take samples, entering the property could be considered trespass. Laws against trespass are mostly provincial statutes. In Manitoba, the law is *The Petty Trespasses Act,* (RSM 1987, c. P50).

Labour Law

As employers, environmental geoscientists are guided by their professional code of ethics. However, they should still be aware of their legal obligations. By law, employers are required to abide by the terms of the labour laws that apply to the jurisdiction they work in. Throughout Canada, employers are bound by Section 217.1 to the *Criminal Code* (also known as the Westray Act) which states that:

> "**217.1** *Every one who undertakes, or has the authority, to direct how another person does work or performs a task is under a legal duty to take reasonable steps to prevent bodily harm to that person, or any other person, arising from that work or task.*"

Most other aspects of labour law are governed by provincial statute in Canada. For example, in Manitoba, two of the relevant acts are:

- *The Employment Standards Code* (Manitoba, C.C.S.M. c. E110)
- *The Workplace Safety and Health Act* (Manitoba, C.C.S.M. c. W210).

Contract and Business Law

Contract law affects all environmental geoscientists at some point in their practice. As employees, they have obligations to their employers. Consultants have obligations to their clients. Academics have obligations to their institutions and funding agencies. These obligations are spelled out in the relevant contracts between the geoscientists and

their employers, clients or funding agencies. Failure to live up to contractual obligations could result in civil action by the aggrieved party, in addition to termination of the contract. Environmental geoscientists who form corporations to conduct their practice should become familiar with the laws affecting incorporation. Depending on the nature of the business, they may have to incorporate under the *Canada Corporations Act* (R.S.C. 1970, c. C-32) or one of the provincial corporation acts such as, in Manitoba, *The Corporation Act* (RSM 1987, c. C225).

Environmental Law

Although regulators are required to know the laws and regulations they are expected to enforce, all environmental geoscientists have an obligation to know the environmental acts and regulations that they are expected to obey.

Federal environmental laws that are in effect across Canada include the *Canadian Environment Protection Act* (S.C. 1999, c. 33). Every province and territory has its own environmental acts and regulations. For example, in Manitoba these laws include:

- *The Contaminated Sites Remediation Act,* (SM 1996, c. 40)
- *The Dangerous Goods Handling & Transportation Act* (RSM 1987, c. D12)
- *The Drinking Water Safety Act,* (SM 2002, c. 36)
- *The Environment Act,* (SM 1987–88, c. 26)
- *The Ground Water and Water Well Act,* (SM 2012, c. 27)

Professional Registration Laws

Except for Prince Edward Island and Yukon Territory, geoscientists in Canada are required by law to register with a provincial or territorial professional association. If work falls under the definition of geoscience practice, as defined by the relevant provincial or territorial act, the geoscientist must register. There are no exceptions. Membership in a professional society includes being bound by the society's Bylaws and Code of Ethics. Individuals who register not only gain recognition of their professional status but demonstrate their commitment to ethical behaviour. These associations are:

- Association of Professional Engineers and Geoscientists of Alberta
- Association of Professional Engineers and Geoscientists of British Columbia
- Association of Professional Engineers and Geoscientists of the Province of Manitoba
- Association of Professional Engineers and Geoscientists of New Brunswick
- Professional Engineers and Geoscientists Newfoundland and Labrador
- Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists
- Association of Professional Geoscientists of Nova Scotia
- Association of Professional Geoscientists of Ontario
- L'Ordre des géologues du Québec
- Association of Professional Engineers and Geoscientists of Saskatchewan

Standards and Guidelines

In addition to establishing acts and regulations that are enforceable under law, many jurisdictions have published guidelines and standards for environmental geoscience. These can be considered professional standards for those jurisdictions. Examples from Manitoba, Ontario and Alberta include:

- *Guideline 98-01 Environmental Site Investigations in Manitoba* (Province of Manitoba May 2002)
- *Guide for Completing Phase One Environmental Site Assessments under Ontario Regulation 153/04* (Province of Ontario June 2011a)
- *Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04* (Province of Ontario June 2011b)
- *Guide to Preparing Environmental Impact Assessment Reports in Alberta* (Province of Alberta March 2013)

Many professional registration associations have professional practice committees that publish guides for their members. For example, in the field of environmental regulation, Association of Professional Geoscientists of Ontario (APGO) published *Guidance for Environmental Site Assessments under Ontario Regulation 153/04* (APGO 2011).

Another source of professional standards relevant to environmental geoscience practice comes from private standards agencies. Two examples are the American Society for Testing and Materials (ASTM) and the Canadian Standards Association (CSA).

ASTM has published two standards that relate to environmental geoscience practice:

- *ASTM E1527 - 05 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM 2005)
- *ASTM E1903 - 11 Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process* (ASTM 2011)

CSA has published three standards that relate to environmental geoscience practice:

- *Z763-96 (R2006) - Introduction to Environmental Risk Assessment Studies* (CSA 2006)
- *Z768-01 (R2012) - Phase I Environmental Site Assessment* (CSA 2012)
- *CAN/CSA-Z769-00 (R2008) - Phase II Environmental Site Assessment* (CSA 2008)

CONCLUSION

Professional geoscientists practicing environmental geoscience have an obligation to the public, the profession and themselves to become familiar with, and be compliant with, the various laws, regulations, codes of ethics and standards that affect their practice. The familiar maxim that "*ignorance of the law is no excuse*" applies especially to educated professionals.

It is worth noting that laws, regulations, codes of ethics and standards are only as good as the people who follow them. The good news is that while researching this paper, the author could find very few examples of environmental geoscientists making the news through violations of either criminal or civil law. Neither was the author able to find examples where environmental geoscientists had been censured by their professional associations for ethical violations. It is clear, from the available evidence, that geoscientists in general and environmental geoscientists in particular tend to have high ethical standards. To preserve this favourable situation, geoscientists have a strong incentive to encourage high professional standards within their organizations, be they private compa-

nies, academic institutions or government agencies. Geoscientists can also set an example for ethical behaviour through active membership and participation in the associations that regulate their profession.

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