International Center for Journalists

Advancing Quality Journalism Worldwide

Ten Practical Tips for Environmental Reporting

By Peter Nelson

International Center
for Journalists

International Center for Journalists

The International Center for Journalists, a non-profit, professional organization, promotes quality journalism worldwide in the belief that independent, vigorous media are crucial in improving the human condition.

Since 1984, the International Center for Journalists has worked directly with more than 40,000 journalists from 176 countries. Aiming to raise the standards of journalism, ICFJ offers hands-on training, workshops, seminars, fellowships and international exchanges to reporters and media managers around the globe.

At ICFJ, we believe in the power of journalism to promote positive change.

For more information, please contact:

International Center for Journalists
1616 H Street, NW, Third Floor
Washington, D.C. 20006 USA

Tel: (202) 737-3700 * Fax: (202) 737-0530
E-mail: editor@icfj.org * www.icfj.org * www.ijnet.org

World Wide Fund for Nature

The WWF-World Wide Fund for Nature is the world's largest private international conservation organization with 28 affiliates and Associate National Organizations around the world and over 5.2 million regular supporters. WWF aims to conserve nature and ecological processes by preserving genetic, species and ecosystem diversity; by ensuring that the use of renewable natural resources is sustainable both now and in the long term; and by promoting actions to reduce pollution and wasteful exploitation and consumption of resources. WWF continues to be known as the World Wildlife Fund in Canada and the United States of America.

For more information, please contact:

Conservation News Service
WWF
CH-1196 Gland, Switzerland

Ten Practical Tips for Environmental Reporting

By Peter Nelson

A publication of the **International Center for Journalists** with support from the **World Wide Fund for Nature** and the **John D. and Catherine T. MacArthur Foundation.**

About the Author

Peter Nelson is a freelance reporter based in Washington, D.C. From 1990 to 1992, he was editor-in-chief of Greenwire, an environmental news service. He has reported extensively on the environment and development, as well as environmental politics in the United States. Nelson has also worked for The Hotline, a political news service. In 1988 he graduated from McGill University in Montreal, Canada with a bachelor's degree in political science.

ISBN Number 0-9626584-6-4

Author's Acknowledgments

I received help from a great many sources in preparing this guide, and I would like to acknowledge a few of them.

Paul Hemp's excellent guide for economic reporters, also published by ICFJ, served as a model for this booklet.

Special thanks to Karen Morris Vincent for research assistance, undertaken in her usual professional manner. Nancy Benton helped with proofreading.

I received valuable advice from Greenwire publisher Philip Shabecoff, who gave me the benefit of 14 years experience on the environmental beat at *The New York Times.*

Finally, I would like to thank the entire staff at the International Center for Journalists for al their help, especially Bryna Brennan and George Krimsky for their excellent editorial suggestions.

Contents

1 ICFJ Foreword

3 Introduction

6 1. Write Original Stories

9 2. Build and Maintain Good Sources

12 3. Prepare In Advance

15 4. Translate Environmental Jargon

17 5. Make the Story Alive and Relevant

23 6. Think Twice About Statistics

29 7. Report Science Carefully

33 8. Look for Hidden Interests

35 9. Seek Balance

39 10. Don’t Forget Follow-Up Stories

43 In Conclusion

45 Glossary

51 Resources

ICFJ Foreword

Ten Practical Tips for Environmental Reporting is the second in a series of instructional guides on specialized reporting techniques published by ICFJ. Like the first one, *Ten Practical Tips for Business and Economic Reporting*, the goal is to reach a wide range of reporters and editors worldwide whose knowledge spans from novice to expert. The idea for this latest effort followed a series of environmental workshops conducted by ICFJ staff, who found a dearth of relevant how-to material available to journalists amidst an abundance of need.

The tips are aimed mainly toward reporters. Those new to the environmental beat can use the booklet as a guidebook, while veterans may use it to rethink ways of building sources or following up on daily stories. Editors, the "gatekeepers" for what appears in print and broadcast, also can benefit from the tips by learning how to make environmental news clearer and more germane to

the public. A common cry at each CFJ environmental workshop for reporters is: "Tell my editor!"

One of the threads that runs throughout the booklet is that environmental news is different. It is broad, embracing nothing less than life itself. It is interdependent with other fields, such as politics, culture and the economy. It is complex, and therefore resistant to simple explanations and equations. It is technical, which means it requires some expertise. Environmental news reporting is imprecise because environmental science is imprecise—imprecise in its sources, data, scientific methodology and solutions. And it is emotional in the effect it has on people.

In some areas, however, good environmental reporting should be the same as any other good journalism: make it interesting; write it clearly; explain the complexities to the audience; and raise solutions—not just problems.

Finally, on behalf of the International Center for Journalists, I would like to thank the John D. and Catherine T. MacArthur Foundation for its support of this project.

—Bryna Brennan
Project Coordinator

Introduction

Environmental journalism is a relatively recent phenomenon. Before the 1970s, few reporters wrote about the topic in any depth. Concern about our natural resources and habitat was not yet a widespread grass-roots issue. Today, most news organizations recognize that the environment is a major story, and when possible, are devoting resources to cover it.

Covering the environment can no longer be regarded as an exotic beat. But it will most likely always be a complicated one. Environmental issues have economic, political, sociological and public health connections. They transcend borders. In developing nations, where the need for growth is particularly strong and the potential for ecological damage severe, the issue is heightened. Timely and accurate reporting is more necessary than ever.

This booklet offers some practical tips for aspiring reporters as well as seasoned environmental journalists. Although I have tried to use examples that are relevant to reporters in developing nations, the recommendations apply equally to our colleagues worldwide.

There are two main themes:

1. **Reporters need to keep their audience in mind.**

2. **Reporters should ask questions.**

Most stories could be greatly improved by following these basic principles. Although they're obvious, they can easily be forgotten.

Reporters' primary responsibility is to their readers or viewers. Many people use news reports as their only source of information about the complexities of the environment. That means reporters act as educators, explaining technical material while crafting a readable, interesting story.

When reporters keep their audience in mind, they are more apt to write clearly and provide enough background information for their stories to make sense. Some journalists argue that they write for a limited audience of experts; most people aren't interested in environmental news. I disagree. Everyone is interested in the environment.

Reminding reporters to ask more questions seems a little silly. After all, that's what reporters do. Yet, too many journalists don't ask enough questions and fail to get the clarification they need to make the story understandable for the reader or viewer.

Some reporters can be intimidated by their sources—awed, perhaps, by scientific credentials. The result is that journalists often don't press for all the information they need: the definition of a technical term, the significance of a finding, or the state of scientific consensus on an issue.

It is easy to nod your head while sources babble on, pretending to understand their remarks. Many journalists are afraid to admit their ignorance or ask a silly question. For journalists, there are no silly questions. There are <u>unnecessary</u> ones, however. Obviously, one doesn't ask a world-renowned scientist how to spell his name. Advance preparation is necessary for any interview, and that is covered elsewhere in this booklet. Anything that helps a reporter better understand the subject is worth asking. It can be embarrassing to admit you don't know something, but it's nowhere near as embarrassing as a reputation for sloppy reporting.

The tips in this book range from how to find innovative story ideas to how to deal with statistics. Obviously it is not a comprehensive technical book that will fulfill all your needs. But I hope that it gets newcomers started and veterans motivated.

Finally, some argue that to report effectively on the environment, journalists need the latest computer databases and software. I disagree. While modern technology can be helpful, many outstanding reporters don't use it. The main prerequisite for good environmental reporting is in-depth reporting.

—Peter Nelson
Washington, D.C.

1. Write Original Stories

While an editor may toss a press release at a reporter and demand a story, more often it's the reporter who comes up with the ideas. Environmental story ideas flow from myriad sources. A reporter may observe sewage seeping into a river, or a friend may casually mention that a new housing project will endanger a wildlife reserve. Lawmakers debating in parliament or congress may touch on ecological concerns.

A press release can be considered a tip sheet. Used properly it may be a good start for many stories. However, all too often journalists fall into the habit of rewriting press releases without doing any extra leg work. This amounts to little more than acting as a public relations officer. In addition, to cover only one side of the story is not only poor journalism, it's boring.

When a press release arrives, the first question a reporter should ask is whether it contains news. What's the significance of the release? This isn't always apparent, and the reporter may have to contact the company or agency for an explanation. If the explanation isn't adequate, there's probably no reason to report on it.

Journalists should get different perspectives on the release. This shouldn't take too long, and it guarantees an original story. If a company issues a statement touting its environmental work in the rain forest, reporters should try to get reactions from local environmental groups, independent academics and maybe government officials. If the responses from those sources are critical, the corporation should be asked to respond to the criticisms. Similarly, if an environmental group sends out a press release calling on the government to ban a particular chemical, a journalist should get the perspectives of business leaders, government officials and independent scientists.

Keep in Mind:

- Write simple, clear sentences.
- Avoid putting several complex ideas into one paragraph.
- Make sure your transitions help the reader move on.
- Add enough context and history for the reader to better under-stand the story.
- Restate or eliminate the technical information that will con-fuse rather than educate.
- Use a lot of description.
- Make the reader taste, feel and see.

When press releases refer to a report or a poll, reporters should try to get a copy. In many cases, press releases are not written by scientists themselves but by public relations officers. There is always the possibility that a scientist's findings have been mischaracterized or exaggerated.

Another good—and inexpensive—way for reporters to develop sources as well as story ideas is to get on mailing and fax lists. Public affairs officers working for environmental groups, corporations and government agencies are usually eager to get their reports, statements and press releases into the hands of journalists. But there's no single list containing the names and addresses of the world's journalists. It's usually up to the reporter to get included on a mailing or fax list.

This is usually a simple process. A letter to the organization stating the journalist's address, affiliation, and interests should do the trick. It's best to provide as much information about the news organization as possible, including the size of its readership or audience.

The letter should be tailored to the journalist's particular interests, whether it's tropical deforestation, urban pollution, wildlife protection, geographic area, etc. Many large organizations send out so much material it would be impractical to send a journalist everything.
The following is an example of what a letter might look like:

Dear Sir or Madam:

My name is Peter Nelson and I cover environmental issues for *The Daily Times*. The Times has a circulation of 80,000 and its readers include many policy makers and business leaders.

I would like to be added to your mailing or fax list and receive any relevant reports, press releases, etc. I would find this information very valuable and expect it could serve as the basis of a number of stories.

I am particularly interested in information related to [e.g. sustainable development, deforestation, water pollution, etc.].

Sincerely,
Peter Nelson
address
phone and fax numbers

A large percentage of the information received through the mail will probably be junk. It's amazing how many trees have been cut down to make paper for useless press releases.

Unfortunately, the only way to get the good information is to sort through the bad. Over time, it will become apparent which organizations send useful information. Asking groups for publication lists can help with future research.

The hard part may be finding the right names and addresses. One good technique is to ask interview subjects if their organization or agency distributes press releases and reports. Find out the address and the name of the person to contact.

Overall, reporters should take an active role in generating story ideas. All too frequently there's a tendency for environmental coverage to get reduced to disasters, such as toxic spills, or staged events put on by environmental groups or businesses. Contacting sources periodically to ask what's new in their fields is a common method for coming up with stories. It also will keep the reporters abreast of the latest developments.

Reading and watching environmental stories adds to greater understanding as well as story ideas. Ethical reporters acknowledge that plagiarism is taboo but readily admit that some of their best ideas come from reading or seeing the work of their colleagues. A story in a magazine, a television or radio report, or a newspaper article might trigger new ideas for stories. A piece on Amazon jungle burning may lead to a story on fuel consumption or farming modernization.

Reporters—and editors—should keep in mind that every news beat contains an environmental story at some time.

2. Build and Maintain Good Sources

Reporters are not born with long lists of sources, but they can't survive professionally without them. In environmental reporting, a list of reliable experts is indispensable, considering the complexities of covering technical subjects.

The best way for reporters to be sure they adequately cover complicated topics is to talk to as many informed sources as possible. Some of these sources will be used for quotes; others will simply—but necessarily—provide needed background, tips and explanations.

Unfortunately, locating good sources can be difficult. Most reporters don't have access to a comprehensive directory of experts. They have to build their own files.

One of the most common methods of expanding—or starting—a list of sources is to “borrow” them from colleagues. This time-honored journalistic tradition simply means that reporters check out who their colleagues are quoting in the newspapers, magazines, radio, television and newsletters. It is the fastest way to increase the number of potential experts and is especially good for the reporter new to the beat. Build a chain of sources by asking each one to recommend another.

Some reporters hunt for sources at nearby universities. At the very least, academic centers are good places for getting the names and addresses of respected researchers. Government officials, legislators, non-government (NGO) and independent organizations can also direct journalists to sources. And the question reporters should ask at the end of every interview is: “Can you recommend others with whom I should speak?”

Journalists also need to evaluate their sources. Are they cooperative? Are they respected by their peers? Have they been truthful? Of course, if the answer to that last one is no, just ditch them. Keep in mind that a reporter’s reputation and credibility often rests with the words of the sources.

Another thing to look for is whether a source is articulate. Many brilliant minds find it difficult to communicate to non-experts. If a well-respected scientist can’t explain a subject clearly, a reporter may be better off with a less renowned researcher who can put things in clear language. However, reporters should always make sure that they ask someone to comment on his/her area of expertise. Using an articulate expert on global warming as a primary source for an article on deforestation is obviously not ideal.

Good sources are extremely valuable. Once they are identified, they must be maintained. Don’t waste a source’s time by going to the interview unprepared. Reporters should have a good working knowledge of the source’s viewpoint and past work.

Reporters shouldn’t just call their sources when they need something; they should get in the habit of giving and exchanging information as well. Reporters are often the first to know about breakthroughs or other items of interest to special sources. Pass on that information. In the long run, it could pay off in the form of story tips.

Another key to maintaining sources is to treat them fairly. Besides being ethical, this is in a reporter’s interest: needlessly alienating sources will hurt a journalist’s ability to report on future stories.

Most journalists agree that treating sources justly requires that reporters:

1. **Be truthful.** This means identifying oneself as a journalist and being open about the nature of the story.

2. **Do not misquote** a source or take their comments out of context. Needless to say, anything that goes into quotation marks should be exactly what the source said. In some cases it is permissible to make changes to improve syntax and grammar.

3. **Be courteous** and treat sources with respect. This doesn't mean avoiding hard questions. It's possible to be both courteous and skeptical. Unfortunately, many journalists seem to confuse being rude with doing their job well.

4. **Establish ground rules** for an interview. Reporters have their own jargon for the different ground rules and it varies from country to country. Here are some common definitions:
   - "On the record" means that a source can be quoted by name;
   - "On background" means quoted anonymously with a general description of the source (e.g. , "a senior government official said…");
   - "Deep background" means that a reporter can use the information in print but without reference to a source;
   - "Off the record," it means that no information from the interview should be printed. This should be avoided, since the information may be easily available —on the record— elsewhere.

Most sources aren't familiar with these terms and it's best to be as explicit as possible about the rules for an interview. Of course, the ideal is that everything is on the record. Some reporters are so anxious for the information that they guarantee their sources anonymity before it is requested.

Sources may say something on the record that later they would prefer not be quoted. This can create a dilemma. According to the "rules," the comment can be used because the guidelines had been set. But reporters need to consider whether they want to use a source again and whether using a quote is worth the consequences. Will what is in fact a very minor or unnecessary point in a story cause someone to lose a job?

Even if a reporter has been completely fair, there's no guarantee that a source won't be upset over a story because it didn't turn out the way the source wanted. In fact, this happens quite often. But journalists must never report stories with the goal of pleasing their sources. Reporters' foremost responsibility is to their readers or viewers, not to their sources.

Keep in Mind

- Be gentle.
- General assignment reporters are told to save the toughest question for last, the one that will get you thrown out of the office.
- This is not always advisable in environmental reporting.
- All too often reporters writing about environmental topics get back to the office only to find they need to get in touch with their source to re-explain some technical term.

3. Prepare in Advance

Reporters should be students of the subjects they cover. One of the great benefits of journalism is that it enables reporters to develop a certain degree of expertise in their subject areas. This is especially true for a beat as interesting and topical as the environment.

The key to good environmental reporting is advance preparation. This applies equally to veterans and newcomers. At the beginning, reporters new to the environmental beat may be overwhelmed by the complexities of getting ready for an upcoming interview or conference. Novices can be forgiven for not knowing all the aspects of a beat. For example, if a source refers to the “Brundtland Commission”* and you are a newcomer to the environmental beat, don’t be afraid to ask if you don’t know what it is. If the answer is unclear, ask again.

Nothing is more important for a reporter than a willingness—and ability—to ask questions.

On the other hand, reporters with a few years of experience on the environmental beat are expected to have a good working knowledge of the jargon and issues. A veteran environmental reporter who asks a source about the Brundtland Commission is going to lose a lot of credibility. Journalists who don't have a firm grasp of the basic issues after a few years of reporting about the environment risk being seen as lazy—or worse, incompetent. It's up to every reporter to learn as much as possible about the topic and to keep abreast of any recent developments.

Few reporters would argue that they do not need to learn their subject matter. Some might say it is hard to find the time when covering an area as broad as the environment, especially if they cover the environment while juggling other beats.

Some journalists have degrees in science, but most do not, so many cover the environment without a formal background in the subject. One way to obtain more information is to take introductory ecology and environmental science courses at a local university. This isn't always possible. Many journalists don't have access to a university, others are too busy, and still others don't have the money.

Keep in Mind

- If there is time during your interview, ask questions that will help expand your knowledge of environmental issues in general.
- Don't be shy about asking your sources for recommendations on books, glossaries or background material.

Sources often assume that reporters have a thorough background in their field. But the environment is an enormous subject; it would be impossible to know everything.

The best way to learn is to ask questions and then explain the answers clearly and concisely. Veterans, too, can use this technique when acquiring new data or information.

Journalists have a responsibility to educate themselves so that they can adequately educate their readers. They can attend workshops and seminars, read books and specialized magazines, set up background briefings with scientists and other experts, and chat with experienced colleagues. And reporters should always be sure to save their notes and clips for future reference.

Keep in mind that while learning a new subject may be time-consuming in the short run, it will enhance a

---

**The "Bruntland Commission" was a United Nations commission on environment and development Its conclusion--that sustainable management of environmental resources was necessary to ensure human survival--helped set the agenda for the 1992 Earth Summit in Rio de Janeiro.*

career in the long run. The more reporters know, the more quickly they can identify the key aspects of a story. And obviously, well-informed reporters are much more likely to produce accurate stories which educate the public.

A reporter with a reputation for not being prepared risks being cut out of future interviews. Experienced reporters do the bulk of their work before interviews and conferences, studying up on the topic and learning the background of the person to be interviewed. A reporter who is granted a 20-minute interview with a world-renowned scientist would be foolish to waste time asking questions such as “How do you spell your name?” and “Could you explain the greenhouse effect for me?”

The point is: Do your homework!

4. Translate Environmental Jargon

Perhaps the single most important challenge or environmental reporters is to turn scientific gibberish into clear, concise language. Most newspaper readers, television viewers or radio listeners have neither the time nor inclination to turn to the dictionary to decipher environmental terms.

Imagine an average business executive in Mumbai picking up a local paper and turning to an article about the city's air pollution. The story says:

> **Researchers report that measurements of exhaust gas volume for a range of gross-weight vehicles indicates a linear correlation between the gross weight of the vehicle and the exhaust gas volume of the vehicle.**

Technical terms will confuse or bore many readers and they'll turn the page. A reader familiar with the jargon might be able to decode what the sentence means: heavier motor vehicles pollute more than lighter ones. But why didn't the reporter write it that way?

Few journalists set out to report stories that their readers can't or won't understand. But many include language that has precisely that effect. It's the reporter's responsibility to remember that many environmental stories are just too important to go without translations. Think of environmental jargon as a foreign language, which it is for many readers.

Some reporters argue that their work is intended for environmental officials and business leaders who understand most technical terms anyway. Taking the time to define these terms, they argue, would be an insult to their readers' or viewers' intelligence.

But even experts find jargon difficult to read or listen to. And experts themselves are sometimes unclear as to the exact meaning of a technical term. Everyone prefers clear and well-structured stories to stories muddied by bureaucratic language.

Another reason jargon makes its way into stories is because reporters aren't sure what the terms mean. Afraid of making a mistake, or in deference to the importance of a source, sometimes reporters just repeat jargon verbatim. This is another good argument for translating jargon—it forces reporters to be sure they understand the terms they use.

There is always the risk that by translating jargon a reporter will oversimplify or distort its meaning. But there is usually a remedy: have a source provide the translation.

Some reporters are embarrassed to admit that they don't understand a source's comments. However, even the most experienced journalists must routinely ask their sources to explain a term or rephrase their comments in everyday language.

Keep in Mind

- Reread your story and ask yourself:
- Am I using insider language?
- Am I confusing my readers?
- Have I accurately and appropriately translated the scientific jargon and terms?
- Have I educated my readers or viewers?

Another good technique is to repeat the translation back to the source. For example: "So, if I understand you correctly, biodiversity is the variety of life at all levels, including the number of species and differences within species." If a reporter has misinterpreted something, the source will have a chance to explain it again.

Sometimes jargon can't be avoided. A term may have such a specialized meaning or be so common that a reporter has no choice but to use it. But the term must still be defined.

For example, reporters preparing stories on air pollution might want to make the point that smog often occurs when stagnant or still air prevents pollutants from dissipating or breaking up. In explaining what causes air to become stagnant, they would probably have to make reference to temperature inversions. By defining terms immediately, reporters avoid confusing readers.

First, the reporter must know the definition of the term. "Inversions" occur when a layer of warm air traps colder, polluted air close to the ground. The term could be explained like this:

> *Officials said the thick cloud of smog hanging over the city is the result of a temperature inversion, a layer of warm air that forms a lid, trapping cooler, polluted air close to the ground.*

Coming up with clear, accurate definitions for technical terms can be difficult and time-consuming. Reporters, however, can create their own reference guides, maybe on small cards or in a notebook. These definitions can be quickly inserted into stories. As a start, a glossary of some basic environmental terms is included at the end of this booklet.

5. Make Story Alive and Relevant

Even when reporters do use clear language, it's still possible to confuse readers and viewers by not giving them enough information. Reporters who deal with environmental issues every day can forget that not everyone knows about the 1992 Earth Summit.*

Keep in mind that stories should be understandable to the average person, someone who may not follow environmental news regularly. Without context and background, people may not understand a story or see its relevance.

**The Earth Summit, held in 1992 in Rio de Janeiro, was the United Nations Conference on Environment and Development (UNCED) attended by more than 180 world leaders. Among the accords signed at the summit was a treaty on protecting the world's biodiversity*

Journalists should get in the habit of checking their work for unanswered questions. For example, read this excerpt from a report on efforts to clean up a river in Thailand:

> *The government program aims to eradicate water hyacinth—a big problem in the river—by showing people many ways to use the plant, including for compost and woven handicrafts.*

Several questions immediately come to mind. First, in what way is hyacinth "a big problem in the river?" Does this problem affect water quality? Does it cause problems for fishermen? If so, how? What are the economic ramifications? Also, when did the hyacinth become a problem?

Although the reporter didn't explain it, hyacinth grows abundantly in water. But its growth rate increases dramatically when nutrients from fertilizer enter rivers and lakes in the runoff from nearby farms. An explanation of the problem and possible solutions needn't be lengthy and would make the story easier to follow.

Reporters need to anticipate their readers' or viewers' questions since even issues that supposedly "everyone" understands require some background. A recent story about declining stratospheric ozone levels over South America included the following:

> *Since ozone filters ultraviolet solar radiation, less ozone means more radiation, including ultraviolet-B that can cause skin cancer and cataracts. Last Oct. 4, the ozone layer here plummeted to 175 Dobson Units, the standard by which it is measured. It reportedly was the lowest level ever measured over a population center. The norm here is about 300.*

The reporter did an admirable job of explaining the potential effects of declining ozone levels and putting the decline in context. Of course, in order to report this story, the reporter had to understand the subject. Further along in the story the reporter should give the history, pointing out, for example, when the ozone depletion was first noted and why and when the Dobson Units were used.

When deciding how much information should go into a news story, journalists should keep the general public in mind. Some reporters think of a person they know, a friend or relative. Then they ask: "Would this story be clear or should I provide some explanations?"

Informative stories may find few readers or viewers if the subject doesn't seem relevant. This is often the case with environmental news—a story about the ozone layer, for example, could seem removed from peoples' daily lives. It isn't, of course, but people can be forgiven for not recognizing it right away. If a story is important, people will care about it—provided they're given the *reasons* to care.

When beginning a story, a reporter needs to ask, "Why should anyone care about this?" A journalist reporting on air pollution in Santiago, Chile, for example, should consider the ways that Santiago's air pollution affects

residents' lives, their well-being, and the local economy.

For instance, pollution often affects public health. Are there examples? Do studies link high levels of air pollution to health problems? Are people in Santiago more likely to have respiratory ailments than people in other parts of Chile?

In fact, a reputable study has shown that children in Santiago are five times as likely to get bronchitis or similar illnesses than children elsewhere in Chile. The results of the study give residents of Santiago a reason to care about the story.

Reporters can just state the facts of the above study or they can bring it closer to home. For example:

> *Francisco Fuentes sits by the fence in the playground at his Santiago school, unable to join his friends playing because he can't stop wheezing.*

Keep In Mind

- Environmental stories lend themselves to the "feature" style of writing.
- An interesting descriptive lead helps assure the reader will continue with the article.
- Tuck statistics inside to back up what you are writing.
- The goal is to make the story relevant to the reader, to make it essential reading.

Next, the reporter can explain that Francisco is among the one-in-five children who are likely to suffer respiratory ailments, according to a published study.

The above shows how to humanize stories, to make them rich with descriptions of the problem by using active verbs intertwined with background, context and statistics.

Often issues affecting public health also affect the economy. Do pollution-related illnesses account for increased health costs? Are workers less productive because of pollution? Are farmlands less productive? Economic costs of environmental protection are also important to readers. Reporters should explain these costs. Will the efforts to clean Santiago's air mean higher prices in the short run? How about the long run?

A word of caution: There is a danger that in trying to show a story's significance a reporter may exaggerate its importance. Journalists should take special care not to sensationalize their stories. Relevance should be based on sound science, not on wild claims and groundless speculation.

Generally, it's easiest to show the significance of environmental problems that directly affect health or economic productivity. Demonstrating the importance of other issues—wildlife protection, for example—can be more difficult.

It's safe to assume that a large number of people are interested in the welfare of some species. For example, a reporter from the United States reporting the effects of DDT on

bald eagle populations would be confident that many readers would be concerned—the eagle is the national symbol of the United States. Similarly, an Indian journalist doing a story on cattle could assume that many readers would find the subject interesting. In India, cows are sacred among followers of the Hindu religion.

There are also arguments to be made for wildlife protection stories that are based solely on human self-interest—the role that a species plays in an ecosystem, for example. Predators driven to extinction, such as foxes, no longer keep rodent populations in check. Also, for many countries, tourist revenues from game parks are a major source of foreign exchange.

But there are many cases where there are no clear economic or public health benefits to be gained by protecting a species. Why should anyone care if a small bird becomes extinct? Many would argue that the bird should be protected for its own sake. But others will disagree and see the efforts to protect the bird as a needless obstacle to development.

Not everyone will agree that the loss of a species is important. But some will. Others will see the obstacle to economic growth as paramount. When a clash of values is involved, a story may seem significant to different people for different reasons.

6. Think Twice About Statistics

Japan has reduced its import of logs from tropical forests by 5 percent over the last five years.

When this statistic was cited by a Japanese government official it seemed to contradict other figures. Environmental groups had cited increasing Japanese consumption of tropical timber as a major cause of deforestation in Southeast Asia.

But notice what the official said. He didn't say Japan had reduced its consumption of tropical timber. He said it had reduced its imports of logs. The reason log imports had gone down was that Japanese firms had moved some of their processing plants overseas. Tropical log imports had decreased, but the

amount of tropical timber imported had actually increased.

Here's another example. Some U. S. timber companies say there are more trees in the United States today than there were 100 years ago. The statistic is cited as evidence of their responsible stewardship of U. S. forests.

This seemingly straightforward statistic is true but misleading. Why?

All trees are treated as equal. No distinction is made between a 5-foot sapling and a 300-foot redwood. Much of the original forest in the United States has been cut and tree plantations have taken its place. It's possible to have more trees and less forest.

Many sources have a particular view they want to get across, so they may actually cite a statistic that is false or misleading. A half-truth can be more dangerous than a lie. It's more likely that the figure is misleading or it's out of context. Usually, this is done by subtle changes in wording.

In the first example, the official emphasized tropical log imports, which went down, instead of tropical timber consumption, which had increased. In the second example, the timber companies cited the number of trees, while ecologists are more worried about the declining prospects for natural forests and the wildlife they support.

Reporters should pay special attention to the wording of any statistic and ask for its source. Does it come from an organization or group with a reputation for issuing reliable data? If possible, get a copy of the report or table that contains the statistic to verify its accuracy. When you have conflicting numbers, note them along with the sources. It's also important to get comments on statistics. Other experts will be able to evaluate their validity as well as answer the question: What does this mean?

Here's another example of a misleading statistic. A poll of atmospheric scientists shows 70 percent believe that human-induced global warming is occurring; 10 percent don't believe it's happening, and 20 percent said they didn't know.

The poll appears to indicate that those who oppose taking immediate steps to reduce emissions of carbon dioxide and other so-called "greenhouse gases" are at odds with the vast majority of expert opinion, right?

Not exactly. Much of the scientific disagreement over climate change centers around the predicted rate and magnitude of warming, not whether some warming is likely to occur. A scientist who believes the Earth's average temperature will rise by one degree Celsius over the next 200 years and another who predicts a rise of two degrees over the next 40 years are both in the 70 percent majority. But their policy recommendations are likely to be very different.

This is not to say that most scientists wouldn't recommend cutting CO2 emissions; a reporter can't infer that solely from the survey.

The popularity of public opinion polls has increased dramatically over the past few years. Because it's easier to mislead people with poll numbers than

Keep in Mind

- When you use numbers, think in terms of analogies.
- For example, a Latin American journalist describing the size of a deforested region could say that the total area affected is the size of El Salvador.
- Or the same journalist could write that an oil spill has spread over an area equal in size to the province of San Miguel.
- When you cite statistics, make them more understandable by writing, for example, "one-out-of-five people" rather than "20 percent of the population."

other types of statistics, journalists should evaluate survey results with special care. The first questions reporters should ask about any survey are: Why was it done? By whom? Who has an interest in the outcome?

Then journalists should look at what sort of sample was used (i.e., the number of people surveyed). An unbiased sample is crucial to yielding accurate results. There are many ways a sample can be biased. Suppose a magazine polls its readers and asks the question, "Is the government doing enough to protect the environment?" An environmental magazine might get one response, a business magazine another. For this reason, a valid poll is based on a random sample, which is less likely to be biased.

However, even a supposedly random sample can have problems. In the United States, most polling is done over the phone. This works well because almost all of the population has telephone service. But in countries where a substantial percentage of the population is without phone service, the sample will be biased. People with phones will tend to be wealthy and be concentrated in urban areas.

A poll sample should be of a reasonable size. The smaller the sample, the less accurate the results. In a city of any size, most sample sizes range from 400 to 1,000. It depends on the scope. In a community of 1,000, a sampling of 100 is pretty solid. Street interviews are not a true gauge of what the majority of a population is thinking, but may provide insight into the way some people are thinking.

Reporters should also look carefully at the wording of the questions. This can have a dramatic effect on the results. For example, a pollster might find that 70 percent of the people surveyed agreed with the statement, "Government should make more laws to protect the environment." However, a different survey might find only 30 percent of respondents agreed with the statement, "More environmental regulations should be imposed on businesses."

The difference is in the wording. The first question emphasizes protecting the environment, while the second focuses on burdens placed on businesses. The first uses the term "laws," while the second refers to "regulations," which sounds bureaucratic. To report accurately on polls, journalists need to get the exact wording of the questions.

Finally, the answers people give to pollsters should be regarded with some skepticism. One common question asks, “Are you willing to sacrifice economic growth to protect the environment?” Large majorities may answer yes. But if a government attempts to sacrifice growth for environmental protection, it will likely face a good deal of opposition. The reason: it’s easier to answer “yes” to a poll question than to make a real sacrifice.

Indeed, the question above offers another example of the limits of opinion surveys. The question implicitly assumes that economic growth and environmental protection are in conflict. Many environmentalists and economists would argue that this isn’t the case.

Statistics are an indispensable part of environmental news. A reporter can use them to demonstrate the seriousness of an environmental problem or show if it has been overstated. But reporters must evaluate statistics carefully before passing them along to readers.

7. Report Science Carefully

Good science reporting is essential to good environmental reporting. A quick look at a list of important environmental subjects (air pollution, biodiversity, toxic chemicals, the greenhouse effect, ozone layer, etc.) shows that describing each depends on scientific research.

Many scientists worldwide have expressed dissatisfaction with the way science is reported. Science news, they say, is often misleadingly presented. Unfortunately, there is a good deal of truth to this charge.

Part of the problem is that scientists and journalists are guided by somewhat different principles. Scientists are supposed to look for the truth, while reporters look not only for the truth but also for news. News is often defined as a revolutionary “breakthrough” in research or “startling” new prediction. But scientific progress generally occurs in a series of small steps rather than one

dramatic breakthrough. It is generally the gradual accumulation of evidence that is significant.

Environmental journalists spend much of their time reacting to news—a chemical spill, a new law, etc. But most of the important scientific work is not dramatic or even very controversial. However, it still is important. By only reporting accidents and isolated "findings," journalists can give the impression that environmental news is just a series of random accidents and grim predictions. What are needed are more overviews—reports that educate readers about the state of scientific knowledge of an environmental problem.

Scientists are very careful and will qualify most of their assertions. They use words and phrases such as "could indicate" or "may suggest." It's important that journalists accurately reflect the tentativeness of a report's findings. Scientists also shy away from bold predictions and are more likely to offer a range of possibilities. Emphasizing the qualifications that scientists place on their findings may make stories seem a little less dramatic, but the gains in accuracy are worth it.

A few years ago, scientists at NASA, the U.S. space agency, said that an ozone hole might occur over the Northern Hemisphere during the coming winter. The report got a lot of coverage, most of it ignoring the qualifications that the NASA scientists had placed on the prediction. For the hole to appear, a number of specific weather conditions would have to occur.

At the time, many other researchers were skeptical of the NASA warning. For the most part they were ignored by reporters. The hole never developed, and the reaction from many quarters was "another environmental false alarm." What was lost was the more important story—the ozone layer was thinning faster than anticipated over northern latitudes.

If more reporters had initially reported on the conditions that might prevent a hole from forming, the NASA warning would have seemed less like a "false alarm." The public would have been better informed if reporters had focused more on the overall ozone picture and less on the "doomsday" prediction.

Keep in Mind

- You don't need elaborate databases to do environmental journalism well.
- Start creating your own files on subjects of interest.
- Save magazine articles, clip newspapers and put aside tidbits that can be used for longer, investigative pieces.
- Also, keep a dated file so you can follow up on releases that promise changes or action within a time frame.

The way the media report scientific disagreement has also been criticized. Some scientists say reporters are preoccupied with conflict and ignore scientific consensus.

Reporters are trained to get different sides of a story, to give “balance.” This is as important for science news as it is for any subject. But reporters should be careful to give an accurate picture of scientific consensus. In all areas of research there are differences of opinion, and they are often worth mentioning. But they shouldn’t be described in a way that makes it appear that all sides are equal when that isn’t the case.

For example, most scientists now believe that exposure to even small quantities of lead can lower the intelligence levels of children. A small minority of researchers dispute this link. A report on lead should mention both views, but not in a way that gives the impression that there is no scientific consensus on the subject. An article that gives the appearance that the two sides are “equal” when in fact one is in the minority is misleading, thus bad journalism.

This doesn’t mean a reporter should ignore the minority view. Scientific truth is not dependent on a democratic vote (Galileo was in the minority). But reporters can best avoid misleading the public by giving an accurate picture of the scientific consensus.

How can a reporter find the scientific consensus? Asking at reputable universities and scientific institutions is the best way. A good scientist should be able to convey the extent of agreement on a scientific issue.

8. Look for Hidden Interests

Environmental journalism has such political and economic implications that reporters should summon their professional skepticism when tipped to a story about the ecology.

For example, an environmental consulting firm issues a report that says more stringent environmental laws will boost the economy. This appears to be a good story; the report's findings run counter to the common belief that there is a conflict between environmental protection and economic growth. But reporters should consider whether the company stands to benefit from the report's findings.

Obviously it does. New environmental regulations will mean more business for environmental consulting firms. The company has an interest in promoting increased environmental regulation.

This doesn't mean that it's not a good story. The study may be based on sound economic analysis. Just because the firm has an interest in the issue doesn't mean the report is self-serving propaganda. But journalists who recognize the company's interest will be better able to detect if it is propaganda and to give the readers more information.

An oil company that claims drilling in a rain forest will cause little environmental harm should face a barrage of critical questions. The interests of the oil company are apparent. But that doesn't mean that reporters should overlook stories about protective measures taken by oil companies to avoid mishaps.

Some interests are not always so obvious. Environmental groups have to raise money from the general public. Protecting some species, such as baby seals, are better for fund-raising than others. Could this affect what positions an environmental group takes on protecting certain species? Does the need to raise money sometimes cause environmental groups to make exaggerated claims? Not necessarily, but a reporter who is aware of this possibility can examine their claims more critically.

When a reporter gets a report or a poll, one of the first questions asked should be who paid for it? (See Tip #6). If a study has been paid for by an oil company, it is more likely to reach conclusions favorable to the oil industry. Many supposedly neutral studies have been paid for by groups with a lot at stake in how an issue is resolved.

Finding out who funded a project can be difficult. Often it is an "independent" group. So the next question is: "Who funded the group?" If a reporter can't get a clear answer to this question, it's a good reason to be skeptical. Some independent groups look less independent once you find out where they get their money.

Even the work of scientists must be paid for. Unfortunately, few reporters ask scientists where they get their funding, a question that could shed important light on their research.

Keep in Mind

Think about the things you need to avoid when you write environmental stories:

- Long phrases
- Unwieldy paragraphs
- Unexplained technical terms
- Long quotes filled with bureaucratic jargon and simplistic explanations.

9. Seek Balance

Reporters generally wrestle with the fact that they can never be completely unbiased. In choosing what to write about, who to interview and which perspectives to include, reporters necessarily take a stand. A news report can never be considered to be objective truth handed down from the mountain top. Even the most unbiased stories will reflect the perspective of the reporter to some degree. This is the old debate of *objectivity* versus *subjectivity*.

But even if journalists can't be totally objective, they can be fair and responsible. Reporters should make every effort to ensure that their biases don't prevent them from at least trying to be neutral or impartial. All too often reporters put this aside when covering the environment.

In recent years, a growing number of journalists have argued that the basic principles of journalism are inappropriate for environmental issues. Given that

the future of the human habitat is involved, they argue, environmental journalists must become advocates for protecting the environment.

The reasoning goes something like this:

> *A supposedly neutral article treats both sides of an issue as equal when they are not. Who could favor destroying the ozone layer? Who could support exposing farm workers to lethal pesticides? Being "neutral" on these issues is like fiddling while Rome burns. Reporters must take an active role in persuading the public to act on serious environmental risks.*

Someone writing for an environmental magazine may see a need for open advocacy. But in the opinion of many professional journalists, reporters for the mass media will do a better job and perform more of a service to their readers and viewers if they don't become crusaders.

No one favors pollution, but people disagree on what to do about it and whether the steps to reduce it is are worth the costs. These are matters of legitimate disagreement.

The world is full of conflicting values. People differ about the value of saving a species. Others feel some ecological claims are exaggerated. Journalists should not impose their values on a story. A journalist's good basic skills should win out: fact-finding, verifying, and presenting information clearly.

An obvious danger in becoming an advocate is the loss of credibility. In many cases, the public trust is all that a reporter has. Once a reporter loses credibility with the public and sources, it is difficult, if not impossible, to get it back. When reporters are biased on an issue, people will dismiss their stories as propaganda.

There are other dangers. A journalist convinced that global warming is a serious problem could be more likely to report on studies that confirm that opinion and ignore scientific findings to the contrary. In that case, truth becomes a casualty of advocacy.

Some reporters wrongly assume that being fair implies treating all arguments as equal. Let's say a company avoids responsibility for cleaning up a major oil spill. To be fair, a reporter must allow the company an opportunity to present its arguments. But a reporter also has an obligation to evaluate those arguments. If the company says the spill didn't cause much damage, that claim needs to be checked against the facts. If it is apparent that the company is understating the damage, a reporter is obligated to point it out it. To do otherwise would simply be dishonest reporting.

Reporters should depend on factual statements, not their own opinions. Journalists should present the evidence—the results of independent studies and comments from government officials and researchers, etc. Usually the facts speak for themselves.

Reporters in developing countries often face the question of advocacy from a different perspective. In some

Keep in Mind

- Avoid questions that can be answered with a simple “yes” or “no.”
- Ask follow-up questions.
- Ask your sources for examples.
- When they claim to be able to solve problems, make sure they spell out the solutions.

countries, government officials tell journalists they have an obligation to promote development in their nation. Supposedly “neutral” reports that put obstacles in the way of economic development are not “helpful.”

Given the urgent need for development in many countries, this can be a powerful argument. And the pressure to be an advocate for development is strong not only because of nationalism but because governmental authority is involved. But the arguments against advocacy still apply.

Journalists continue to ponder whether the mission of the press is to promote “good” in the world. The more limited objective of informing readers on important issues and events is difficult enough, and it often leads to some good. Overall, reporters should not presume they have the authority to act as protectors of the environment—or anything else.

10. Don't Forget the Follow-up Stories

Even the best, concise, most well-written story will have a minimal impact if it appears just once in a newspaper or on a newscast. As with other issues, the environment has to be kept in the forefront of the news. This can prove to be especially difficult since environmental news often moves slowly; it's easy for the public to lose sight of a problem. A government can pledge to take action and then do nothing, for example.

Important stories need to be revisited every so often to keep readers up to date on the latest developments. What is the government doing on the issue? What progress has been made? What do the latest scientific findings show? Follow-up is crucial for keeping a story alive. This is how and where journalists can have impact.

Environmental news lends itself more to what some call "process" journalism than "episodic" journalism, which is reporting individual events that have a clear beginning and end.

Keep in Mind

- Don't just stick to the latest environmental news development.
- Probe your sources about how long the situation has existed and what the consequences are.
- If you don't include the information in your current story, you may have material for another one.

Here are some other ways to keep environmental stories alive:

- **Look for environmental stories in other beats.** The environment is not only a scientific and political issue; it affects and is affected by a whole range of areas. For example, how are businesses adapting to the demand for ecologically sound products? Will a change in the tax code encourage industries that pollute heavily? What effect will a new industrial complex have on local water sources? Environmental reporters should educate their colleagues—editors as well as reporters—to the environmental impact of a newsworthy event on other areas.
- **Look for connections**. Ecologists study the "web of nature"—the seemingly infinite number of interconnections in the natural world. Reporters should think like ecologists and look for connections to come up with new story ideas.

  For example, suppose a pesticide spill kills all life in a 40-mile stretch of a river. The first reports would obviously describe the facts of the spill, its effect on public health and its economic implications. But there are other stories to report:

  1. Why are farmers using a highly toxic pesticide?
  2. Is the accident evidence of lax safety standards?
  3. Has a crucial food source for birds been eliminated?

  Most stories point to other stories. It's up to reporters to look for connections.

- **Get outside the major city.** This can be difficult but is often well worth it. It's important for reporters to see the areas they report on. Talk to the people affected by a pesticide or farmers who say that efforts to protect an endangered species are destroying their livelihoods. If the issues at stake aren't an abstraction for the reporter, they can be better communicated to the public. By getting outside the city, a reporter can get a different perspective and some good story ideas.
- **Be creative.** Reporters can use their imaginations to come up with follow-up stories. Asking people to be creative may seem like asking them to be "intelligent." In fact, there are ways of stimulating the imagination. One way is to simply

ask yourself the question: Where is this issue leading? Look down that road, and ideas will emerge on what the follow-up should be. For example, soon after reporting on deforestation or an oil spill, journalists can call up legislators to ask if they are considering new legislation in the area. Or they can think of how an issue affects a particular segment of society and write a feature story. Many journalists keep "future files," dating stories and revisiting the topic six months later to report on subsequent developments.

•

In Conclusion

Here are 10 questions to ask yourself when writing an environmental story.

1. Have I made the story “local” so that people can relate to it?
2. Have I added new sources to my list this week?
3. Are the most important aspects emphasized and the trivial discarded?
4. Is my presentation clear and concise?
5. Have I made people “feel” the story and conveyed its significance?
6. Do the descriptions and analogies explain the numbers?
7. Are the technical terms defined?
8. Am I asking and answering enough questions?
9. Have I been fair to my sources and the subject?
10. What would make a good follow up story to this topic?

Online Resources

There are a number of resources online for environmental reporters:

The Society of Environmental Journalists maintains a giant list of organizations, databases, sourcelists and more at: http://www.sej.org/resource/index4.htm. Topics are fairly comprehensive, ranging from exotic species to brownfields to nuclear waste and beyond.

To find sources and experts, try using either Media Resource Service or ProfNet. Media Resource Service is part of Sigma Xi, a scientific research society based in the United States: http://www.sigmaxi.org/. ProfNet (https://profnet.prnewswire.com/) is a digital resource from PR Newswire that connects tends of thousands of company representatives and others working in PR with journalists. It is free for journalists to use, and content is available worldwide. You can search the vast database for sources, press releases and more - and you can search by topic, area of expertise and geographic location. You can also email a query to experts that meet a criteria list you select to gain insight on your story/ beat.

The Environmental Protection Agency (EPA) in the U.S. offers multiple databases for research. Various EPA links and contact information is located here: http://www.sej.org/resource/sources_EPA.htm.

The following blogs and Web sites have also become popular destinations for people to engage in the conversation about various environmental issues:

- **Grist**: http://www.grist.org
- **Shifting Baselines**: http://www.shiftingbaselines.org
- **News Nuclear**: http://news-nuclear.blogspot.com/
- **Enviropundit**: http://enviropundit.blogspot.com/
- **Climate Ark**: http://www.climateark.org

Please note: All of these sites were in good working order as of this book's publication date, however that may change over time.

International Center
for Journalists

Glossary

Abiotic—Non-living component of the environment such as soil, air or water.

Acid Rain—Rainfall with a lower than normal **pH**. Acid precipitation is a more accurate term, because snow, hail and sleet can also be acidic. Normal rainfall is only moderately acidic. Acid precipitation is caused by emissions of sulphur and nitrogen oxides from the burning of **fossil fuels**. Nitrogen oxides (NOx) react in the atmosphere to produce nitric acid (HNO3); sulphur oxides (SOx) react to produce sulfuric acid (H2SO4). Acid rain can cause reproductive failure in aquatic wildlife, damage vegetation and increase the rate that **heavy metals** such as lead are **leached** from the soil.

Air pollution—The introduction of **contaminants** into the air. Air pollution comes in four main categories: Aerosol (droplets of liquid small enough to be suspended in air); particulates (ash, dust and other floating bits of solid matter); radiation and gases. The four main types of polluting gases are carbon monoxide (CO), nitrogen oxides (NOx), sulphur oxides (SOx) and volatile organic compounds (VOCs).

Algal blooms—Condition where large numbers of algae in a body of water interfere with other forms of life, primarily through the consumption of dissolved O2. Can be caused by **eutrophication**.

Alluvial soil—Soil developing from material deposited by running water, as when a flooding river exceeds its banks and spreads across the surrounding land.

Aquifer—A geologic formation that holds water underground. Aquifers are hot topics of debate in areas largely dependent on aquifers for fresh water. Consumption of water from aquifers by urban residents, farmers and industry often outstrips the rate at which the water is naturally replenished. Low water levels in aquifers can result in shortages, water contamination due to increased salinity and concentrations of minerals, and sink holes.

Background Levels—The normal levels of a particular element or compound in an environment, e.g. background levels of radiation, measured to determine routine exposure and to get a base-line figure for further measurements.

Bio-accumulation—The process by which **pesticides** and other chemicals increase their concentrations in an organism over a period of time. This occurs when intake of a substance is greater than the rate at which it is excreted or metabolized. See **Biological magnification**.

Biodegradable—Substances which are capable of being broken down especially into innocuous products by the action of living things (such as bacteria or microorganisms).

Biological hazardous waste—Human or animal substances that could transmit material harmful to the environment when disposed. Includes feces, secretions, blood elements, bandages and other substances. Hospitals produce a lot of biological hazardous waste.

Biological magnification—The process by which pesticides and other substances increase their concentrations as they move up through the food chain. Among the factors that affect biological magnification is the substance's affinity for fatty tissue, its longevity and the concentrating effects of the food chain. See **bio-accumulation.**

Biomass—refers to the total weight of all living things in an environment or sample. Also used to describe organic material that can be used as fuel—dry plants, wood and organic wastes, etc.

British Thermal Unit—A unit for measuring energy. It is the amount of energy required to raise one pound of water one degree Fahrenheit. Known by its acronym BTU.

Carcinogen—A substance that increases the chances that those who come into contact with it will develop cancer. Technically, it does not mean "cancer-causing," because carcinogens will not cause cancer in all people exposed to them.

Chlorofluorocarbons/CFCs—Inert gases manufactured for use in air conditioning and refrigeration systems and as industrial propellants and solvents. When released, CFCs migrate to the upper atmosphere where they destroy the earth's protective **ozone layer.**

Chlorofluoromethanes—The largest subgroup of **CFCs**, used for refrigeration and as solvents for cleaning computer circuitry and microchips. Also known as **freon**.

Contaminant—Any substance in an environment where it does not belong because it causes an aesthetic problem or health hazard. It is usually implied, however, that the substance is harmful. A distinction is usually made between physical and chemical contaminants.

Cost-benefit analysis—A method used by economists for determining the feasibility of a project. The total financial benefits of a project are divided by the total costs for the length of the project. If the number is greater than one, the project is regarded as valid. If less than one it is seen as invalid. This is a seemingly straightforward approach, but there are difficulties in putting monetary

values on some benefits and costs, such as the preservation of a species or air quality.

Debt-for-nature—A financial agreement by which a country is forgiven a certain portion of its foreign debt if it agrees to set aside undeveloped land for preservation. "Debt-for-nature swaps" are usually made in conjunction with an independent group, such as an environmental organization.

Deforestation—Loss of forests through logging, farming, road construction, ranching and mining. Can cause soil **erosion**, **siltation**, and loss of **critical habitat.**

Desertification—The process of conversion of non-desert land to desert, usually as a result of overgrazing, depletion of organic matter in the soil, overuse of groundwater, changing patterns of precipitation, etc.

Dioxin—common name for polychlorinated dibenxo-para-dioxin. Dioxins are substances which vary widely in toxicity. A dioxin found in in the pesticide Silvex—2,3,7,8 tetrachlo dibenzo-para-dioxin—is regarded as the most toxic substance synthesized by humans. Other dioxins are less dangerous, but none is completely safe. Dioxins are often by-products of industrial processes, the combustion of certain plastics such as PVC piping and paper bleaching processes which utilize chlorine. Symptoms of exposure to dioxin include nerve and liver damage, fetal abnormalities and miscarriages. Like **PCB's**, dioxins accumulate in the food chain.

Ecosystem—A defined region, large or small, including all its living organisms. Generally seen as a region in which living organisms have a relatively stable relationship.

Effluent—Any waste product in the process of being discharged into the environment. Not all effluents cause pollution, but virtually all pollution comes from effluents.

Endemic—Naturally occurring in a limited area (e.g. Pandas are endemic to China).

Erosion— The migration of soil due to wind, rain and other natural forces. Can be accelerated by agriculture, overgrazing, logging and road-building.

Estuary —A river mouth or coastal bay where fresh water and sea water mix. Estuaries are significant because they tend to be among the most diverse **ecosystems**.

Eutrophication— The process by which the nutrient level of a body of water is increased. Under normal conditions, this process is very slow. When eutrophication is accelerated by runoff from agriculture and other human activities it is called **cultural eutrophication**. When accelerated, eutrophication is significant because it deprives water of oxygen, killing fish and other non-plant aquatic life.

Fecal coliform—A type of bacteria normally found in the lower intestines of mammals. Serves as an indicator for fecal contamination by animals or humans when present in water, soil or food supplies. When ingested can cause disease and death.

Fossil fuels—The main energy source for modern societies, carbon-based fossil fuels are made from the organic remains of fossilized organisms. Coal and petroleum are the two main fossil fuels. Natural gas is a subcategory of petroleum because it is created during petroleum formation.

Gaia hypothesis— A theory that argues the Earth and its atmosphere act as a self-regulating organism. Many societies have regarded the Earth as a living being and the hypothesis takes its name for the Greek goddess of the Earth. Some interpret this theory as pointing to Earth's essential fragility and the dangers of man-made disruptions to the environment. Other supporters of the Gaia hypothesis see it as a reflection of their belief in human interdependence with soils, oceans, forests, "biomass", etc. Still others argue that because the Earth is self-regulating, it will adapt to changes caused by humans.

Greenhouse effect—The process by which gases, mainly carbon dioxide and water vapor, retain some of the sun's heat and reflect it back to Earth. The gases allow short wavelength energy from the sun to pass through; but they absorb longer wavelength energy, thereby preventing all of the sun's heat from being reflected back into space. Without this natural process, the earth would be considerably colder than it is and unable to support life.

(Note: In recent years, as atmospheric concentrations of **greenhouse gases** have increased, many scientists have become concerned that the Earth's average temperatures will rise as a result. Most researchers agree that this process, called **global warming,** is underway. However, there is a great deal of uncertainty over the expected rate and magnitude of the warming. Besides CO2, other "greenhouse gases" are methane, nitrous oxide and CFCs.)

Groundwater—Water held in **aquifers** and the soil beneath the **water table**. Groundwater faces two major threats. The first is depletion through overuse or overdrafts. The second is pollution from leaking **landfills** and other sources of toxic substances, chemicals used for agriculture chief among them.

Habitat—The ecosystem which supports a given organism.

Hazardous waste—Liquid or **solid waste** that poses a risk to the safety or health of people or the environment.

Heavy metals—A group of metals with relatively high atomic weights. Some, like zinc and iron, are required by humans in very small amounts. Others like lead, mercury, chromium and cadmium are generally toxic to plant and animal life in low concentrations. They are of particular concern because they **bio-accumulate** and do not degrade or dissipate. Two non-metals, arsenic and selenium are referred to as heavy metals. While it is not a heavy metal, aluminum is toxic to plants.

Hydrological cycle—The movement of water through the ecosystem. The cycle depends on water's ability to exist in both liquid and gaseous forms. The cycle goes through four phases:

evaporation, condensation, rainfall and runoff.

Leachate—A liquid that contains dissolved materials picked up from passing through a permeable solid that contains the material in concentrated form. For example, landfills generate leachate that is frequently contaminated by toxic substances and poses a threat to **groundwater**
.

Lead—The most common heavy metal. It is highly toxic to humans and most other living animals. Exposure can interfere with nerve activity and the formation of red blood cells, thereby inhibiting the transfer of oxygen to the body. Its use in water pipes is a major public health hazard. Lead exposure is believed to inhibit the intellectual development of children.

Mercury—A highly toxic heavy metal. Exposure can cause nervousness and tremors; high levels can lead to nerve damage and severe birth defects. In water bodies, anaerobic bacteria converts it to methyl mercury, a fat soluble compound that bio-accumulates in the food chain.

Mutagen—Substance that alters an organism's genetic make-up and changes the characteristics of its offspring. The mutations will be passed down to the offspring's offspring. See **teratogenic**.

Neurotoxin—A substance that damages or destroys nerve tissue. Many insecticides work as neurotoxins. Because nerve structure is relatively similar throughout the animal kingdom, these insecticides are potentially hazardous to other animals, including humans.

NGO—Abbreviation for non-governmental organization. Refers to environmental, grassroots and other groups not chartered by governments.

Niche—Functional role of a species in a community or a habitat supplying the necessary conditions for a particular organism.

Nitrogen fixation—Conversion of atmospheric nitrogen (N) to forms usable by organisms. In soil, for example, certain bacteria fix atmospheric nitrogen, making it available to plants.

Non-point source pollution—Pollution from diffuse sources such as water **run-off,** aerial deposition, or agriculture.

Nutrient cycle—Path of a nutrient through the ecosystem from assimilation by organisms to release by decomposition.

Ozone—A bluish unstable gas made up of three oxygen atoms (O3). At ground level, ozone is formed by the reactions of urban air pollutants in sunlight and oxygen. Also known as **photochemical smog**, it is a serious respiratory irritant. In the stratosphere, ozone is created when sunlight hits oxygen molecules (02) and splits them apart. The free oxygen atoms then attach to other oxygen molecules.

Ozone layer— The layer of **ozone** in the stratosphere that filters out hazardous ultraviolet-B radiation (which is linked to increases in the frequency of skin cancer, cataracts in

mammals, and damage to crops). The ozone layer has diminished over the past two decades, particularly over southern latitudes. Many scientists believe that depletion of the ozone layer has been caused by increased levels of chlorine in the atmosphere due to the release of **CFCs**. Others believe that the ozone layer fluctuates according to a long-term natural cycle. Whatever the cause, periodically the layer over the Antarctic becomes so thin that scientists speak of an **ozone hole.**

Pesticide—A chemical used to kill pests, especially insects and rodents. Included in this category are insecticides, rodenticides, herbicides and fungicides.

pH—A measure of the acidity or alkalinity of a chemical solution. The range is from 0 to 14, with 0 being the most acidic, 14 the most alkaline. A solution with a pH of 7.0 is neutral. The pH tells how many hydrogen atoms are in a liquid.

Phytotoxic—Poisonous to plants. Point source pollution—Any pollution discharged from a fixed source, such as a pipe or smokestack. Usually refers to water pollution, however.

Polychlorinated biphenyls (PCB's) —A compound formerly used for the insulation of electrical transformers and as hydraulic fluid. Exposure can cause gastrointestinal distress and numbness in hands and feet among other symptoms. It bioaccumulates quickly in the food chain. PCB concentrations will remain unchanged forever in most living tissue.

ppm—parts per million; a measure of pollutant concentrations.

ppb—parts per billion.

Radon - An invisible, naturally occurring radioactive gas. It becomes an environmental problem when it seeps from natural sources in the ground into homes where it can be inhaled. Its decay products, known as daughters of radon, can cause lung cancer.

Reforestation—The replanting of cut forest or bare land.

Run-off— Water flowing across land. Approximately one-sixth of precipitation falling in an area leaves it as run-off. The rest evaporates or soaks into the ground. Run-off from agriculture, highways and other human activities can be a major source of water pollution.

Salinization —Degradation of fertile land by salt. Salinization of agricultural lands is common in areas dependent on irrigation: surface evaporation draws up salts from underground rocks and soils, and depletion of ground water increases percentage of minerals and salts in remaining water supply.

Sanitary landfill—a method of disposing of solid waste by compacting it and burying it in the earth, typically in an excavated site lined with either plastic or clay and equipped with a **leachate** collection system.

Sedimentation—The accumulation of soil and/or mineral particles at the bottom of a body of water. Usually caused by erosion of nearby soil, or by slowing movement of a body of

water, as when a river is obstructed by a dam.

Sewage—Domestic waste water, including human wastes and wash water.

Silviculture—The cultivation of particular kinds of trees for specific commercial purposes, such as firewood or the manufacture of paper. Because silviculture projects are typically monocultures, they are more susceptible to diseases and provide little habitat for wildlife.

Sink—Anything that absorbs significant quantities of a substance or type of energy. Because vegetation converts carbon dioxide to solid carbon, the Amazon rain forest acts as a carbon sink.

Solid waste—Waste including, but not limited to, municipal, commercial, institutional, residual or solid waste, including solid, liquid, semi-solid or contained gaseous liquids.

Sustainable development—The theory that humankind's future well-being depends on the conservation of natural resources. Put another way, sustainable development is an approach to progress that meets the needs of the present without compromising the ability of future generations to meet their needs.

Teratogenic—A substance that causes birth defects by altering the development of the fetus. It is different than **mutagenic** which alters the genetic structure of the fetus.

Thermal pollution—A harmful increase in water temperature, often caused by the release of heated coolant water from electricity generating stations. Particularly harmful to aquatic life.

Toxicity—The ability of a substance to cause illness or death.

Toxic waste—A waste that poses a substantial hazard to human health or the environment when improperly managed.

Watershed—The land from which a stream gets its water; also used to describe water sources for lakes and entire regions.

Water table—The upper edge of the saturated zone in the soil or **aquifer**.

Wetland— Land where the **water table** is at or near the surface for a significant part of the year. Wetlands are characterized by reeds, cattails and mosses, and are significant because they act to purify water, help dissipate flood waters, and provide rich wildlife habitat.

Resources

Author's note:
I used a variety of sources to prepare this guide and its glossary of terms, including:

Allaby, Michael, *Dictionary of the Environment*, 3rd Edition (New York: New York University Press, 1989).

Ashworth, William, *Encyclopedia of Environmental Studies* (New York: Facts on File, 1991).

Smith, Robert Lee, *Elements of Ecology*, 3rd Edition (New York: Harper Collins, 1992).

For more information on covering regional environmental issues, I suggest the following (among others):

Environmental Reporting in Central America

By Diane Jukofsky and Chris Wille. Printed privately by Conservation Media Center/The Rainforest Alliance. Available in English and Spanish versions. Contact:

The Conservation Media Center
Apdo. 138-2150, Moravia
San José, Costa Rica
Tel. 506/36-3073 — Fax 506/40-2543

Covering the Environment

By Michael J. Keating. Printed privately by the (Canadian) National Roundtable on the Environment and the Economy. Available in English and French versions. Contact:

National Roundtable on the Environment and the Economy
1 Nicholas Street, Suite 1500
Ottawa, Ontario K1N 7B7
Tel. (613) 992-7189 — Fax (613) 992-7385

Reporting on the Environment: A Handbook for Journalists

Printed privately in 1988 by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). Contact:

United Nations/ESCAP
United Nations Building
Rajadamnern Avenue
Bangkok 10200 Thailand

Reporting on the Environment: A Handbook for Malaysian Journalists

Printed privately in 1989 by the Malaysian Forum of Environmental Journalists. Contact:

Therasa Manavalan, Secretary
Malaysian Forum of Environmental Journalists
c/o The Malay Mail, 31 Jln. Riong
59100 Kuala Lumpur, Indonesia

Environmental Profiles, A Global Guide to Projects and People

Edited by Linda Sobel Katz, Sarah Orrick, and Robert Honig. Published in 1993 by Garland Publishing, New York. Identifies environmental movements in 115 countries.

Environmental Sourcebook

By Edith Stein. Published in 1992 by Lyons & Burford, New York. Best quick reference for its size. The Lyons and Burford catalogue lists a number of books related to natural history and other aspects of the outdoor world. Contact:

Lyons and Burford, Publishers
31 West 21st Street
New York, NY 10010
Tel. (212) 620-9580

Notes

Notes

International Center
for Journalists

1616 H Street, 3rd Floor
Washington, DC 20006

www.icfj.org