



Air Quality and the Public Trust

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THE PUBLIC TRUST AND AIR QUALITY

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1. ABSTRACT

As we approach the fortieth anniversary of the Clean Air Act, it is worthwhile to review the basic philosophical underpinnings that place limits on private ownership for the public good. This presentation will examine the Public Trust Doctrine, which dates back to the time of the Emperor Justinian, in relationship to protecting the public from the harmful effects of air pollution. It will focus on issues that have emerged since the 1970 Clean Air Act, such as exposures to environmental tobacco smoke. It will also focus localized situations in which significant exposures can occur in the surrounding population, such as the emerging health threat of outdoor wood boilers. A central concern in all these instances is what the primary responsibility of government should be as the keeper of the public trust.

2. INTRODUCTION

This paper addresses an area of environmental health within its broader ethical and philosophical context. It is, therefore, departing from the established format of hypothesis generation and consequent testing and interpretation. The field of environmental ethics is an increasingly important one (c.f., Newton et al, 2006), and parallels efforts to incorporate philosophical concerns in other scientific fields as well, (e.g., Sen, 1987, in the field of economics). Here, we examine some specific concerns regarding the applications of the Public Trust Doctrine to air pollution issues.

3. TWO CONCEPTIONS OF JUSTICE

We start first with two different and opposing conceptions of justice. One is based on subjective relativism and the other on an ethical aspiration towards a well-ordered society. With subjective relativism, as described by Newton et al. (Newton et al., 2006), there are: a) no absolute or unchanging moral principles; b) rules that govern each situation are to be determined in relation to something else; and c) the sole source of knowledge or authority is in the perception of the individual. This idea is consistent with the fact that we live in a pluralistic society in which tolerance and acceptance of other people is a clearly accepted expectation. (Newton et al., 2006). Unfortunately, the notions of tolerance and acceptance, particularly regarding actions of private citizens, may often

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fail to recognize the ramifications in the form of public health and environmental externalities.

A well-ordered society, according to John Rawls (Rawls, 2001), is regulated by: a) a public conception of justice; b) one system of cooperation; and c) a normally effective sense of justice among the citizens. As in a condition of subjective relativism, one recognizes the existence of a pluralistic society. A well-ordered society, however, contains certain fundamental ideas from which it is possible to work up a political conception of justice. The environment as a consideration of justice was not directly addressed by Rawls. On the other hand, he did posit the requirement of basic rights and liberties as being needed and required by individuals to be fully cooperating members of society.

It is this construct that not only makes our laws possible both to establish and enforce. It also makes it possible to approach conditions of justice from an ethical perspective. Debates concerning environmental issues entail a great deal of analysis regarding risk assessment and the scientific basis for risk assessment. While these are important considerations, it is possible that an important perspective may be lost if the protection of the environmental protection is considered solely as a scientific matter. In that respect, environmental laws and policies should be no less subject to a discussion of ethics than more identifiable forms of civil justice. The basis of our environmental laws, in other words, stems from “a public conception of justice” and not an ever-changing compromise among different subjective realities. It compels regulatory thinking to reach beyond subjective relativism towards a more encompassing vision. This exercise for a public health organization is not a trivial one. It influences how such an organization should advocate for a particular environmental law, or even for a broader regulatory policy.

4. THE PUBLIC TRUST

In searching for a fundamental principle to guide this discussion, none seems as compelling as the notion of the *public trust*.

By the law of nature these things are common to all mankind, the air, running water, the sea, and consequently all the shores of the sea.
Codex Justinian, 529 A.D.

Specifically, Justinian ruled that navigable water was the common property of a nation’s citizens, owned by everyone and no one at once, an unwritten public easement protected by their steward, the state (Dowie, 2005). The Public Trust Doctrine, as applied currently, is founded on this concept regarding the public nature of our rivers, the sea, and the seashore (Sax, 1970).

Through its evolution in English common law, the idea of “sovereign” property was born, and with this came the duty of state stewardship (Dowie, 2005). There are two co-existing interests to trust lands: the *jus publicum* is the public’s right to use and enjoy trust lands; the *jus privatum* is the private property rights that may exist in the use and possession of trust lands. The Public Trust Doctrine says that the State must recognize the *jus privatum* or private property rights so long as they remain subservient to the inalienable public trust over land and water (Dowie, 2005). In essence, the problem that the Public Trust Doctrine is addressing is the political imbalance created when the

interests of a diffuse majority is made subject to the will of a concerted minority (Saxe, 1970).

Throughout much of the last century, the Public Trust Doctrine was used primarily against obstacles to commerce and navigation (Dowie, 2005). The concept was reinvigorated, however, in 1970 with a landmark article by Joseph Sax (Sax, 1970). In this article, he advocated that the Public Trust Doctrine be expanded far beyond navigable water to protect the soil, air, and other species – things “so particularly the gifts of nature’s bounty that they ought to be preserved for the whole of the populace.”

An example of the impact of Sax’s thinking can be found in the Hawaii state constitution.

For the benefit of present and future generations, the State and its political subdivisions shall conserve and protect Hawaii’s natural beauty and all natural resources, including land, water, air, minerals and energy sources, and shall promote the development and utilization of these resources in a manner consistent with their conservation and in furtherance of the self-sufficiency of the State. All public natural resources are held in trust by the State for the benefit of the people.” – Hawaii State Constitution, Article XI, Section I (Added 1978).

On a more grassroots level, in 1970 over 20 million people celebrated the first Earth Day a national demonstration of support for public protection of common resources (Dowie, 2005). Shortly thereafter, President Nixon signed into law the National Environmental Protection Act, the Clean Water Act, the Coastal Zone Management Act, the Endangered Species Act, and legislation creating the Environmental Protection Agency. It could be argued that during this historical moment the interests of the *diffuse majority* to which Sax referred found a collective voice that subsequently impelled a new constellation of environmental laws.

As a guiding philosophic principle, the Public Trust Doctrine addresses two major environmental policy concerns. The first is that our ambient environment is a public resource given in trust to the State to protect. The second is that with respect to the public trust, private interests are subservient to public interests (note, for instance, examples of wetlands laws and fishing or hunting regulations). The counter-argument, that of *takings*, applies when the State appropriates private property without adequate compensation. The balancing of these interests has a long history in the implementation of environmental and nuisance laws. Yet, it is critical to recognize that there are two competing interests, and the important role of the State as the guardian of the *diffuse* public interest, as noted by Sax.

5. PROTECTION OF AIR QUALITY

Application of the Public Trust Doctrine to air quality concerns involves three inter-related components: 1) the enactment of laws to limit or eliminate exposure to air pollutants; 2) the use of nuisance provisions for situations in which environmental exposure limits are either lacking or insufficiently address the variety of circumstances that could create harm; and 3) the development of a research and education plan to provide a stronger basis for encouraging effective exposure reduction alternatives. Despite the fact that most of the Public Trust Doctrine’s history has focused on navigable waters and the seashore, the underlying principle, that there are resources “owned by

everyone and no one” (see Dowie, 2005) should certainly apply to something as fundamental to life as the air we breathe.

5.1 Environmental Laws

The Public Trust Doctrine is not a set of laws. Rather, we can view it as a political concept that can guide the nature and intensity of actions to support the preservation of the public good. It can be argued, for example, that the strong sense of public empowerment surrounding the first Earth Day was motivated in at least some fundamental way by our collective desire to have the State exert its police power to enforce environmental protections. This sentiment is reflected as well in the legislation creating the Bureau of Air Quality in Maine.

“The Legislature by this chapter intends to exercise the police power of the State in a coordinated state-wide program to control present and future sources of emission of air contaminants to the end that air polluting activities of every type shall be regulated in a manner that reasonably insures the continued health, safety, and general welfare of all of the citizens of the State; protects property values and protects plant and animal life.” (MRSA, Title 38, Chapter 4, Section 581).

Over the past fifteen years, one of the most important advances in public health has been the enactment of clean indoor air laws in workplaces and public environments. These laws were motivated in large part by the U.S. Environmental Protection Agency finding that environmental tobacco smoke (ETS) is a human carcinogen (USEPA, 1992). Prohibitions on smoking were enacted in Maine and throughout the country on the premise that there is no safe level of exposure, and that the interests of smokers must be subservient to the basic public obligation of protecting health. While not explicitly stated, this is an application of the public trust doctrine, in that the public’s right to healthy air cannot be compromised by private decisions to allow smoking. Indeed, the enforcement of these laws are largely self-enforced, based on the cultural expectation that smoking is not acceptable in indoor environments accessible to the public.

5.2 Public Nuisance: Outdoor Wood Boiler Example

Wood smoke has long been considered a health concern, particularly for people with lung and heart diseases (Naeher et al, 2007). In addition, as a combustion mixture, wood smoke also contains many toxic compounds that can increase the risk of cancer. Increasing attention is focused on the fine particulate fraction of wood smoke. These particles can penetrate deep into the lungs where they can cause damage locally or cause systemic effects due to absorption into the bloodstream.

Under ideal conditions, there is the expectation that the laws preventing or restricting air pollutant emissions would be sufficient to avoid any public harm. Performance standards now exist for wood stoves, and there are many educational resources available to consumers on how to burn wood efficiently and with the minimum of emissions. With the advent of outdoor wood boilers (OWBs), however, there is an emerging and serious concern regarding the ability of the State to protect the public from harm. OWBs have become increasingly popular over the past several years because they use a renewable resource, can provide a cheaper source of space heating and domestic hot water than fossil fuels, and are exempt from federal regulation. The advantages are particularly evident in rural areas such as Maine.

Unfortunately, the features that make outdoor wood boilers so appealing also contribute to their potential to adversely affect health. Reports and studies conducted in the past few years have documented the significant air pollution exposure problems that these boilers can create (Attorney General of New York State, 2005; NESCAUM, 2006; Johnson, 2006), and that exposures resulting from OWB use can far exceed health criteria (Brown et al., 2007). For most OWBs, their large fireboxes, the cyclic nature of their operations (in response to intermittent demands for hot water), relatively low temperatures compared to other combustion devices, and short stack heights are among the features that have been cited as reasons why their hourly emissions substantially are higher than wood stoves (NESCAUM, 2006). In the absence of federal regulation, states are beginning to adopt regulations to control emissions of new units based on guidance from the Environmental Protection Agency (USEPA, 2007) and the Northeast States for Coordinated Air Use Management (NESCAUM, 2007).

This regulatory activity gives rise to the often misleading perception that the State is providing the public sufficient protection from the harmful effects of OWBs. Although regulatory guidance has been developed, this perception may be misplaced for a number of reasons. First, the air quality standard used to measure acceptable air quality, the PM 2.5 standard (or particulate matter 2.5 microns in diameter), has been criticized as being not stringent enough and for not focusing on a short enough time period (e.g., two hours) to protect against acute health effects. Moreover, the regulatory analysis could have adopted a more conservative air quality criterion than compliance with the PM 2.5 air quality standard, such as one focused on Prevention of Significant Deterioration, but it did not. Second, there are questions as to whether the exposure assessment techniques used by the regulatory agencies to develop their guidance were sufficiently protective even when this arguably lax standard is used (for example, by the omission of multiple OWBs in the modeling estimates). Third, the potential adverse health consequences associated with the full range of harmful air pollutants in the combustion mixture were not addressed. Fourth, there is little if any air quality monitoring data on which to evaluate the current public health dimensions of the problem and consequently, the extent of risk reduction which will be afforded by regulations based on these recommendations. Fifth, there is little protection in these regulations afforded to those living near existing boilers

States are recognizing the potential limitations regarding the protection of public health by incorporating nuisance language into the OWB regulations. This language is focused primarily on evidence of visible emissions without any specific reference to health impacts. In this context, enforcement is under the purview of state environmental agencies. While promising in concept, it is too early to determine whether this mechanism will prove effective.

It is within this regulatory and policy context that those seeking relief now have to make their case regarding evidence of health harm. Absent helpful state regulation, those affected by OWBs could seek relief through recourse to general nuisance provisions that have existed for the past two centuries. Generally, nuisances constitute conditions that may endanger life or health, or obstruct reasonable and comfortable use of property. Thus OWBs could theoretically be included among the state's list of particular nuisances. In a recent legal proceeding, however, harm to health was not assumed but had to be demonstrated. The perceptions surrounding this case framed the matter more as a dispute among neighbors. From a philosophic point of view, the context for decision making appeared to be more along the lines of a subjective relativism argument than one related

to “a public conception of justice,” at least with respect to the protection of health or the environment.

The difficulty faced by affected individuals is further magnified by the 1993 Supreme Court *Daubert* decision. This decision set a standard for actions to protect public health to areas that are highly researched according to rigorous peer review standards. Such a bar is effectively prohibitive for individual private citizens who seek some sort of relief from the boiler emissions.

Thus, a major barrier to the satisfactory resolution of health problems in this context is the difficulty in demonstrating a specific connection between the air pollution and the impairment of health or well being. This is a well-known dilemma in risk assessment, which relies on epidemiological and toxicological studies to determine acceptable levels of exposure, and is not focused to ascribing causation in particular instances. Inferences can be drawn from population based studies using statistical methods that are useful for setting public policy. These types of studies overcome the uncertainties associated with the inability to reject alternative hypotheses when applied to individual cases.

There are also significant barriers when trying to implement traditional public health approaches to nuisances. Such approaches focus more on vector borne diseases, where a particular illness can be ascribed to a particular cause and where nuisance can be determined qualitatively (e.g., the simple presence of an offending agent). On the other hand, air pollution tends to aggravate pre-existing conditions rather than cause illness outright. Also, nuisances in these circumstances often rely on some quantitative assessment of exposure, which may often be both difficult to obtain and difficult to interpret, creating even further disincentives for enforcement by local health officers.

Sadly, without nuisance provisions, affected individuals are left with few options for seeking relief. In some cases these individuals have argued for basic constitutional protections focused on life, liberty and the pursuit of happiness.* This is a relatively rare approach. Yet, there are documented cases of families being forced to leave their homes as a result of a neighbor’s outdoor wood boiler to protect their health and well being. Further, they do so with the knowledge that their property might be very difficult to sell, at least without taking a significant loss because of the neighboring boiler.

Despite its current limitations, however, a nuisance-based approach provides a valuable backstop for ensuring public health protection in individual circumstances. Strong nuisance provisions would not only address instances in which broader air quality laws may prove ineffective. They would also create the means by which emerging health threats could be identified and resolved through additional public policy initiatives. A robust interaction between nuisance enforcement and a re-invigorated Public Trust Doctrine could provide the ideal context for ensuring protection of the ambient air.

In time, the Public Trust Doctrine might prove useful to this situation as set of criteria from which to evaluate the adequacy of environmental regulations. The circumstance of outdoor wood boilers, however, like that of many localized air pollution problems, does not apply to a defined geographical area, such as a seashore or waterway. Instead, it applies to a commonly accepted public resource, our ambient air, which is being compromised in separate, generally isolated situations. Here, the diffuse majority *Sax* described is randomly selected from the general population whenever a neighbor may decide to install an OWB.

5.3 The Importance of Research and Education to the Public Trust Doctrine

Finally, the concept of the public trust recognizes that an ever changing dynamic exists when deciding the degree of protection that should be accorded to our natural resources. Because of this, there is always the opportunity for the public dialogue and consequently, the opportunities for citizen action, to be transformed by new research. Research on the harmful effects of environmental tobacco smoke ultimately led to the consensus regarding its role in the development of lung cancer, as well as variety of other respiratory and cardiovascular diseases. This consensus regarding its role as a human carcinogen, led to the deletion of the ventilation standard recommendation by the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) for buildings where smoking was present. ASHRAE based this recommendation on the fact that a safe level of exposure to ETS had not been determined by any recognized credible authority. A variety of legislative initiatives on indoor smoking prohibitions followed which, in addition to the specific policy objectives, provided substantial opportunities for public education and mobilization. While focused predominantly on the air in public *indoor* environments, the success of such advocacy can provide hope for a renewed sense of protection for our outdoor air as well, particularly given the similarity of health concerns between ETS and outdoor air pollution.

We are just beginning to develop a research and information base on outdoor wood boilers (e.g., Johnson, 1006; Brown et al., 2007). The importance of efforts such as these to political advocacy is to recognize the interactive framework in which we are working. The challenge before us is how to promote a meaningful public health agenda on air quality that reconnects us with these basic public underpinnings of a democratic society.

Beyond the specific cases, an advocacy framework based on protecting the public trust also provides a means by which we can develop a collective sense of ownership regarding our air. In the context of a general framework, the lessons and accomplishments of individual cases become cumulative in nature. They are consequently amenable to public policy research, as well as ongoing educational opportunities.

6. CONCLUSION

This paper has outlined the beginnings of a dynamic strategy for advocacy regarding air quality. It involves the interaction of public laws and nuisance abatement, motivated by a robust research and education agenda. Recent public policy successes in the area of tobacco control, particularly with respect to smoking in public places, can engender a renewed sense of air as a public trust. Outdoor wood boilers are an example of an emerging health threat requiring the interplay of all the major components of this strategy. It is hoped that through this example, we may develop a more generalized model for public health protection.

*See, for example, the following sections of Maine's constitution. Section 1. Natural rights. All people are born equally free and independent, and have certain natural, inherent and unalienable rights, among which are those of enjoying and defending life and liberty, acquiring, possessing and protecting property, and of pursuing and obtaining safety and happiness; Section 6-A. Discrimination against persons prohibited. No person shall be deprived of life, liberty or property without due process of law, nor be

denied the equal protection of the laws, nor be denied the enjoyment of that person's civil rights or be discriminated against in the exercise thereof; Section 19. Right of redress for injuries. Every person, for an injury inflicted on the person or the person's reputation, property or immunities, shall have remedy by due course of law; and right and justice shall be administered freely and without sale, completely and without denial, promptly and without delay.

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