

THE ROLE OF THE STATES IN CONTROL OF WEATHER MODIFICATION

by

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ABSTRACT

It now appears that, at least for the near future, the only federal controls of weather modification will be the record keeping and reporting requirements of the National Oceanic and Atmospheric Administration. About two-thirds of the states have enacted cloud seeding laws to fill the regulatory void. These statutes, however, are quite varied and many of them are inadequate. Accordingly, there is a need for "suggested" or "model" state weather control legislation. In a project funded by the Office of Water Research and Technology and administered through the Arizona Water Resources Research Center, such a proposed law has been prepared. It delegates means of control over seeding to an administrative agency, authorizes governmental funding of operations, establishes procedures and criteria for professional licensing of cloud seeders, creates a system for regulation of projects through operational permits, requires record keeping and reporting, and sets standards for resolution of water rights and legal liability issues.

INTRODUCTION

Fulton J. Sheen once observed:

History?
The British never remember it.
The Irish never forget it.
The Russians never make it.
And the Americans never learn from it.

The archbishop overstated the case with respect to all four nations. Although we Americans often have not heeded history's lessons, our legal system does attempt to learn from the past. Through the doctrine of precedent, decisions of courts in prior cases are usually regarded as the law governing present similar lawsuits (Cardozo, 1921). Our federal and state legislatures and administrative agencies have been laboratories in which varying ideas, concepts, and principles of law have been tried and tested. Government efforts to control weather modification are one illustration how various participants in our legal system attempt, sometimes successfully and other times with less positive results, to learn from legal history how to guide and control the development and management of a new technology.

THE FEDERAL ROLE

Ours is a federated nation in which, even though the central government may have power to regulate activities, it often fails to do so or else defers to the states. Federal courts have in the past and are now considering a few lawsuits involving weather modification, but these cases (one dealing with a patent infringement claim, another an action for losses being litigated under the Federal Tort Claims Act, and a third case in which the litigants failed to demonstrate any harm was caused them by the cloud seeding) have not as yet played any significant role in shaping our system of legal control over weather modification activities (Davis, 1974). The Federal Tort Claims Act case, which involves the June 1972 Rapid City, South Dakota flash flood and the alleged role played in it by a federally-sponsored seeding project (St.-Amand, Davis & Elliott, 1973), is still in its preliminary phase, but may become the source of important weather control legal norms.

Apart from appropriations laws, federal legislation is limited to an act authorizing the Department of Commerce to make rules regarding keeping records of cloud seeding activities and making reports to the Department based upon information from those records. Commerce has subdelegated its power to the National Oceanic and Atmospheric Administration which has made and several times amended rules respecting keeping records and reporting to its Office of Environmental Modification (Charak, 1975).

At almost every session of Congress since the advent of scientific cloud seeding nearly thirty years ago, proposals have been advanced advocating a greater federal involvement in weather modification operations and regulation. Other than control through exercise of the power of the purse by spending research and development funds

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in accordance with federal procurement procedures (Davis, 1970), and whatever control is incidental to the reporting requirement, these bills have failed to become law (Johnson, 1970). Thus far during the sessions of the 94th Congress, six bills have been introduced. Only one of them, H.R. 10039, which Congressman Evans of Colorado has been working on for several years, is intended to effect regulation of weather modification. It has a provision for issuance of federal operational permits. Two bills call for weather control studies and for monitoring climate (S. 2705 and H.R. 10013); and three deal with drought relief research and federal matching funding for state programs (S. 2706, S. 2707, and H.R. 12083). Given the past history of congressional inaction on similar proposals, opposition from governmental agencies and other groups to all or part of each of the bills, and lack of any groundswell of public pressure for their enactment, it is likely that none of these proposals will become law this year.

THE ROLE OF THE STATES

Absent federal legislation, there is state power to regulate weather modification. In the 1851 case of Cooley v. Board of Port Wardens, the Supreme Court was faced with the issue whether Pennsylvania could regulate harbor pilots at Philadelphia. Pilotage obviously affected interstate commerce, a matter which Congress could have controlled, but had not in this particular done so. The Court announced:

Now the power to regulate commerce, embraces a vast field, containing not only many, but exceedingly various subjects, quite unlike in their nature; some imperatively demanding a single uniform rule, operating equally on the commerce of the United States in every port; and some, like the subject now in question, as imperatively demanding that diversity, which alone can meet the local necessities of navigation.

Later judges have slightly rephrased the formula to speak of subjects which "admit of" diversity (Powell, 1956). Although the principles of cloud physics do not vary from state to state, control of their practical application by weather modifiers is a matter which "admits of" diversity. Until the Congress acts to regulate weather modification, there can be a state role in controlling its practice.

About two-thirds of the states have enacted cloud seeding laws to fill the regulatory void left by inaction in Washington. These statutes, however, are quite varied. They range from the mere mention of atmospheric water resources in the Hawaiian state water plan legislation to the very detailed regulatory system established by North Dakota. Some provide no method for state or local governmental funding of cloud seeding; Utah, at the other extreme, makes weather modification a state monopoly (Stauffer, 1974). The present laws of Pennsylvania and West Virginia and the law which Maryland had during the late 1960's and early 1970's demonstrate a negative attitude toward weather alteration efforts; others, like the South Dakota weather control statutes and administrative rules, are supportive of the technology (Davis, 1974).

Lack of national uniformity, absence of legislation in some states, and paucity of legal controls in others has probably not yet been of great hindrance to the development and management of weather alteration technology. It is important, though, to recognize that several aspects of state weather modification regulation could function more effectively if they were uniform throughout the nation, and that experience has proven that sound legislation is a condition precedent to extensive, well-operated cloud seeding projects in any jurisdiction. According to the managers of the South Dakota program, the original state-wide seeding operation undertaken in this country:

The first step must be to obtain a law. Generally, without a law there is no state agency with the authority or time to organize any activity. But not just any law. Insist upon a comprehensive regulatory piece of legislation which, the first time, addresses every conceivable problem area.

It is ironic that the authors of that declaration will be unemployed as of the end of June because of the failure of the 1976 South Dakota state senate to pass the appropriations bill which law is necessary to the continuation of their program. (Donnan, Pellett, Leblang & Ritter, 1976).

States which do desire to have a comprehensive, responsible law for protection of the public interest through careful control over application of the technology, can turn either to some of the more progressive state laws as precedents and learn from their history, or to a "model" or "suggested" state law prepared in a project funded by the Office of Water Research and Technology and administered through the Arizona Water Resources Research Center. The bill's text and a commentary relating to it will appear in the final report on the project. It is also likely that a version of the text, accompanied with an explanation, will be published this fall by the Council of State Governments in its annual volume of "Suggested State Legislation," and sent to all legislators in the country.

This suggested law was prepared by starting with the current provisions on weather modification in the Arizona Water Code, and determining what changes should be made to reflect the state of the technology, protect the public health, safety and environment, and encourage utilization of atmospheric water resources in a manner consistent with use of ground and surface water resources. Provisions designed to give effect to the desired changes were drafted through use of sources such as other provisions of the Arizona Water Code and of bills which seek to amend it, weather modification legislation and regulations from states with well-prepared laws and rules, and other legislative proposals for weather alteration laws. This tentative draft was circulated for comments by persons with expertise in weather modification, water resources management, water law, the Arizona political processes, and other relevant disciplines. Pertinent comments received were incorporated in the final draft.

The resultant proposal contains seven major elements. (For a list of these components in existing state laws, see the Appendix.) These areas covered by the draft legislation are:

- (1) Delegation of authority to a state agency to administer the legislation;
- (2) Special authorization to spend public funds or create public entities which may raise and spend funds for projects;
- (3) Requirement of obtaining special state certification prior to practicing weather modification;
- (4) Requirement of getting prior approval before operations or registering them with state officials;
- (5) Requirement of keeping seeding records and making periodic reports to public officials of information based upon them;
- (6) Adoption of a position about acquisition by individuals in atmospheric water rights or in rights to use supplemental water derived through precipitation enhancement; and
- (7) Adoption of a position with respect to whether weather modifiers will be liable only for harm caused by negligence, or whether they will be liable for all harm they cause, whether or not they are careless.

Administrative agency. Although weather modification includes such matters as hail and fog suppression and treatment of lightning-producing storms and hurricanes, it is usually thought of in terms of precipitation enhancement--either rainmaking or increasing winter snowpack. Accordingly it should not be surprising that most states with administrative agencies which have been delegated the power to regulate weather control have lodged such authority in natural resources or agricultural departments (Davis, 1975). Arizona's present law places administrative power in the Water Commission. The proposed bill would continue that delegation of power. There are, however, other possibilities which in other states may be more viable. Illinois grants regulatory authority to the state licensing department (Ackermann, Changnon & Davis, 1974).

Whatever state administrative body is designated to accomplish the regulatory purposes established by legislation, usually there has been provision for assistance to it from a weather modification board which may either act only in an advisory capacity as is the case in Colorado, or may have the actual decision-making power, with the umbrella agency merely handling ministerial details. The suggested law would give the board the authority to make decisions, rather than mere recommendations.

Public funding. Rain falls, as the Bible notes, on the just as well as the unjust. In like manner artificially induced rain falls upon both those who pay for it and those who do not. Public funding is one method of eliminating the freeloader who would, without putting up any money, reap the advantages of voluntary contributions to a precipitation enhancement project from neighbors. Special provisions in many weather control laws establish such a mechanism. There are two types: the model from the High Plains states which provides for creation of public entities which may raise taxes through mill levies and then contract for their expenditure upon operational projects; and the California model which authorizes all agencies within the jurisdiction with power to develop and manage water resources to use weather modification in doing so. The Arizona projected legislation has followed the California model.

Professional licensing. Public regulation through a licensing system is designed to insure competency of doctors, lawyers, embalmers, cosmetologists, and a host of other businesses, trades, and professions. As far back as the times of Aesop there was warning about the incompetent farmer whose hen laid one egg a day. The farmer reasoned: "Now if I were to double my hen's allowance of barley, she would lay me two eggs a day instead of one." Unfortunately doubling the grain made the hen fat, sleek and lazy, and before long she stopped laying altogether. As the Sage noted: "Figures don't lie, but they won't make a hen lay." Neither will doubling the amount of seeding materials used double rainfall increases. Standards of competency may, under the suggested law, be set out in administrative rules.

The very name "rainmaker" conjures up ghosts of frauds and tricksters whose unscientific antics have bilked drought-stricken ranchers and farmers--and some cities as well. State control over personnel involved in weather modification can seek to weed out the dishonest as well as the incompetent practitioner. Weather modifiers, as well as all other sorts of professionals, are anxious to have some official means

of elimination from their midst of charlatans. Individual licensing of professionals, has not always been successful in cleansing the ranks (since Watergate we lawyers have embarked upon an orgy of soul-searching), but some control over who seeds clouds would seem to be preferable to a system in which anyone with a glib tongue, seeding materials, drought conditions, and lots of gall can con the public.

Operational permit. The heart of any effective regulatory scheme is the operational permit. Through its use the agency controlling weather modification can determine all of the parameters of permitted projects, modify them when necessary, and (in extreme cases) suspend or revoke them. The permit is viewed in the Arizona draft law as the major method whereby the public interest in proposed projects is protected. The operator (whose project manager on the scene must have a professional license) must conform to project requirements as set forth in the permit as originally issued or modified.

Weather modification tends to be a seasonal activity. Hence most states issue permits only for one year. In a few jurisdictions now there is recognition of the need of project sponsors and bidders to have some longer-range assurance of continuity of operations; they allow for conditional approval of permits for longer periods. The suggested law would extend such conditional approval, subject to annual scrutiny, up to four years.

Record keeping and reporting. Weather modification is and will continue to be controversial. Just as the Indian rain dancer wonders whether the onslaught of rain is "his" or "ours," so does the cloud seeder. The public is quick to grant nature credit for wanted weather events, and assess blame upon the seeders for unwanted ones. Natural weather variability complicates the evaluation process. Even experimental projects with careful randomized seeding of target areas and comparison with control areas of similar nature and with past historical records, have been rife with controversy as to results. Keeping adequate records of cloud seeding activities will not make the acrimony disappear; but it does afford a base from which some sort of evaluation might be made. The contractor needs such information to sell his services, the sponsor needs it as some sort of assurance that the money was well spent, and the public needs it as a basis on which it might determine whether to support, shut down, or ignore cloud seeding.

Administrators can, and under the Arizona projected law have the power to, visit projects and determine for themselves what is happening. That is a useful check, but one which demands considerable manpower in the event of multiple projects in a jurisdiction. The requirement of reporting information from records is the simplest way for administrative agencies to keep abreast of what is happening. Information reported can be used in modification, suspension, revocation, and refusal to renew permits. It also can be used to allow permittees to continue present projects and to renew them.

Raw reports may not supply adequate information for either the general public or the agency. Keep in mind the case in which:

There was a young lady from Rye
With a shape like a capital I.
When they said, "It's too bad,"
She learned how to pad.
Which shows you that figures can lie.

But, whatever the shortcomings of record keeping and reporting requirements, their inclusion in weather control legislation makes evaluation and regulation less subject to padding.

Water rights acquisition. To someone whose family moved to Arizona in the 1880's (at least in part) because of a water rights dispute in another jurisdiction, the right to use of atmospheric waters and to use of supplemental water derived through precipitation enhancement efforts is of considerable interest. Only three state legislatures--Colorado, Utah, and North Dakota--have addressed the topic; and in only three states have the courts done so. A Texas court asserted that the landowner beneath clouds had atmospheric water rights in them which could not legally be rustled by seeders. A New York court summarily denied that landowners had any claim to clouds. And the Pennsylvania judge allowed as how landowners did have some claims, but that they would have to give them up to publically authorized seeders (Davis, 1968).

Enhancement of rainfall directly applied to crops during the growing season creates no water rights problem. But augmentation of streamflow through winter orographic cloud seeding to deepen snowpack and increase runoff can create a conflict of claims between a downstream sponsor of the seeding and the owner of lands in the target area. Legislation, rather than sporadic "yes," "no," and "maybe" litigation is perhaps the most appropriate manner to resolve such conflict.

Legal liability theory. Some few states now assert that only negligent cloud seeders can be held liable for the harm they cause. Pennsylvania and West Virginia

provide that harm from weather modification, whether it has been conducted with professional care or not, will be compensated for. Most states have not addressed the issue and thereby leave it to the uncertainty of future litigation. The model law adopts the position of liability only for fault.

CONCLUSION

Because weather blithely ignores state boundaries, when the day comes for more widespread application of weather control engineering, interstate problems will become increasingly vexatious. Federalization of weather modification law may then result. But in the meanwhile the problems of varied and inadequate state laws can be ameliorated by enactment of laws such as the type advocated by the Arizona project's draft text and commentary. In this case Americans can learn from history.

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APPENDIX

The state laws in force as of the end of 1975 are herein classified as to whether they possess the particular elements checked.

The following states which did not have any laws in force at that time and are not classified are: Alabama, Alaska, Arkansas, Delaware, Georgia, Indiana, Kentucky, Maine, Maryland, Michigan, Mississippi, Missouri, New Jersey, North Carolina, Ohio, Rhode Island, South Carolina, Tennessee, Vermont, and Virginia. Hawaii, whose law merely mentions atmospheric waters, is also not classified.

STATE WEATHER MODIFICATION LAW ELEMENTS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<u>State</u>	<u>Admv.</u>	<u>Funding</u>	<u>Licensing</u>	<u>Permit</u>	<u>Record & Report</u>	<u>Water Rts.</u>	<u>Liab.</u>
AZ	X			X	X		
CA	X	X		X	X		
CO	X	X	X	X	X	X	
CT	X	X					
FL	X	X		X	X		
ID	X	X		X	X		
IL	X		X	X	X		
IA		X					X
KS	X	X	X	X	X		
LA	X		X	X	X		
MA	X			X			
MN		X					
MT	X	X	X	X	X		
NE	X	X		X			
NV	X	X	X	X	X		
NH		X					
NM	X			X	X		
NY		X				X	
ND	X	X	X	X	X	X	X
OK	X	X	X	X	X		
OR	X	X		X	X		
PA	X			X	X	X	X
SD	X	X	X	X	X		
TX	X	X	X	X	X	X	X
UT	X	X	X	X	X	X	X
WA	X	X	X	X	X		
WV	X			X	X		
WI	X			X	X		X
WY	X	X		X	X		