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Weather Modification: The Continuing Search for Rights and Liabilities

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INTRODUCTION

The forces of nature are indeed powerful. Floods, hurricanes, lightning, and tornadoes kill thousands of people annually and cause billions of dollars in property damage.[1] It should be no surprise that attempts to modify these little-understood forces create the risk of damage to both person and property. Notwithstanding the inherent risks, weather-modification activities have been taking place in the United States for decades. In 1989, thirteen states were involved in weather-modification activities covering about 56,000 square miles.[2]

Weather modification is principally used to trick the "rivers flowing through our skies"[3] into releasing their moisture for our benefit.[4] In addition, weather modification has been used for hail suppression,[5] fog dissipation,[6] lightning suppression,[7] and hurri-

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1. R. DEWSNUP & D. JENSEN, LEGAL ASPECTS OF WEATHER MODIFICATION IN UTAH 3 (1977) (report prepared for the Division of Water Resources of the State of Utah).

2. Orville, *A Report on the Conference on the Science and Technology of Cloud Seeding in the Black Hills*, 71 BULL. AM. METEOR. SOC'Y 832 (1990).

Weather modification is normally accomplished by dispensing selected seeding materials into clouds either from aircraft or from generators on the ground. *Weather Modification and Cloud Seeding*, AQUARIUS, June 1980, 6 [hereinafter *Cloud Seeding*] (Newsletter for the Utah Center for Water Resources Research, Utah Water Research Laboratory, Utah State University).

3. The moisture in the atmosphere has been characterized as "rivers flowing through our skies." *See, e.g.*, Davis, *Special Problems of Liability and Water Resources Law*, in WEATHER MODIFICATION AND THE LAW 103, 104 (H. Taubenfeld ed. 1968).

4. Davis, *Four Decades of American Weather Modification Law*, 19 J. WEATHER MODIF. 102, 103 (1987). Thirty years of research has proved that properly designed and operated weather-modification programs can increase rainfall or snowfall ten to twenty-five percent. WEATHER MODIFICATION ASSOCIATION, WEATHER MODIFICATION: SOME FACTS ABOUT SEEDING CLOUDS 15 (1984).

Whether weather-modification activities actually benefit society is a scientific issue beyond the scope of this Comment. The recommended weather-modification statute in the appendix contains a declaration of purpose similar to that contained in state weather-modification statutes asserting that weather modification is beneficial to society. *Compare* APPENDIX § 2 *with* ILL. ANN. STAT. ch. 111, § 7302(a) (Smith-Hurd 1978 & Supp. 1990).

5. Henderson, *Commercial Prospects and Problems for Weather Modification Activities*, in WEATHER MODIFICATION AND THE LAW, *supra* note 3, at 66-67.

cane suppression.[8] Weather modification seeks to control nature's powerful forces by producing various changes in our natural environment which are considered beneficial to society.[9]

While changing the environment often benefits some parties, it inevitably harms others. Our legal system is usually very effective at allocating and redistributing losses between parties. However, existing legal concepts concerning rights in water, rights in land, and liabilities for causing damage, simply break down when applied to weather-modification activities.[10] Thus, our society is in need of uniform legislation which clearly defines both weather modifiers' rights in the moisture they produce and their liabilities for the harm their activities may cause.[11]

This Comment analyzes the issues and current law surrounding weather modification and recommends a state statute which defines the rights and liabilities of weather modifiers and those affected by their activities.[12] First, the liability issue is discussed. The cases in which claims have been made against weather modifiers are considered as well as the reasons for the plaintiffs' almost universal failure within the judicial system. The types of actions plaintiffs could maintain and whether a legislative response to them is appropriate is then considered. Affirmative defenses available to weather modifiers, remedies available to plaintiffs, and immunity concludes this discussion of liability.

Second, landowners' rights in the atmosphere are discussed. These rights are not yet clearly established and are largely theoretical; thus, without legislative guidance the judicial system will have difficulty defining and protecting rights in the atmosphere. Third, the rights of weather modifiers to the "new water" they

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6. *Id.* at 67.

7. Roberts, *The State of the Art in Weather Modification*, in WEATHER MODIFICATION AND THE LAW, *supra* note 3, at 8.

8. *Id.* at 9.

9. O'Neill, *Current and Future Weather Modification Programs of the Department of Defense*, in WEATHER MODIFICATION AND THE LAW, *supra* note 3, at 31. Weather-modification activities are justified using some sort of utilitarian calculus which seeks to benefit the masses at the possible expense of the few. TAUBENFELD, *Report of the Task Group on the Legal Implications of Weather Modification*, in CONTROLLING THE WEATHER 11-12 (H. Taubenfeld ed. 1970).

10. R. DEWSNUP & D. JENSEN, *supra* note 1, at I-1.

11. Davis, *Strategies for State Regulation of Weather Modification*, in CONTROLLING THE WEATHER, *supra* note 9, at 193. The need for uniform standards of liability seems beyond question. TAUBENFELD, *supra* note 9, at 13.

12. APPENDIX.

produce is discussed. Weather modifiers have the same problems proving they are entitled to such water as plaintiffs have establishing liability. Fourth, the administrative solution to the problems confronting weather modifiers is discussed. Many states provide an administrative system which allocates the costs and benefits of weather-modification activities. Agencies perform this function by exercising their discretion to issue licenses and permits to weather modifiers. Finally, this Comment concludes with a discussion on the future of weather modification. The laws passed today are only interim measures awaiting new weather-modification technology.

I. WEATHER-MODIFICATION LIABILITIES

Changes in the weather due to weather modification can bring unwanted rainfall, snowfall, droughts, or floods.[13] These "natural" disasters may result in economic losses of billions of dollars and even in the loss of life.[14] Altering the weather has various social and psychological effects as well.[15] Weather modification may also have important environmental consequences.[16] Those areas of the country most likely to become targets of precipitation augmentation are also those few remaining areas in which American wildlife and big game have been interfered with least by man's activities.[17] Extermination of species, changes in animals' migratory patterns, and increases in weed and pest

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13. Davis, *supra* note 11, at 181.

14. R. DEWSNUP & D. JENSEN, *supra* note 1, at 3.

15. Davis, *supra* note 11, at 181. *See generally* HUMAN DIMENSIONS OF WEATHER MODIFICATION (W. Sewell ed. 1966).

16. *See generally* E. HEMEL & C. HOLDERNESS, AN ENVIRONMENTALIST'S PRIMER ON WEATHER MODIFICATION (1977) (published by Stanford Environmental Law Society).

17. *Id.* at 40.

> Weather modification through snowfall augmentation in high mountain regions promises to yield substantial commercial benefits, but at the possible expense of wildlife and game communities. Melted runoff from mountain snowfall is the dominant source of America's hydroelectric power. In the West particularly, irrigation and other water transport systems have made melted snowfall the primary source of water for industrial and agricultural uses. In California, snowfall in a few thousand square miles of the High Sierras provides a large portion of the fertile Central Valley's agricultural water; melted Sierra snowfall has also become an essential water source for populous Southern California's residential and industrial needs. Few weather[-]modification applications are likely to have commercial benefits higher than snowfall augmentation in the West's high mountain ranges. Thus, as weather modification becomes more widespread, America's finest wildlife refuges will be the areas most affected.

Id.

population may result from weather-modification activities.[18] These concerns represent a dilemma for the environmentalist: "On one hand, the only way for him to discover the effects of weather modification is to let the technology proceed. On the other hand, he is hesitant to approve of a technology whose full effects are unknown."[19] Because weather modification is capable of causing such devastating damage, it is critical that weather modifiers be made responsible for their actions.

The most common weather-modification activity involves the use of silver iodide as a cloud-seeding agent.[20] Silver iodide, a poison with the potential of harming people and property,[21] is dispensed into the air from ground-based generators or aircraft.[22] Fortunately, silver iodide is used in such small quantities that it will probably not result in harm to anyone.[23] Studies have concluded that cloud-seeding materials, such as silver iodide, are used in such low concentrations that they have no discernible, harmful effects on human life or the environment.[24] In fact, the Environmental Protection Agency has determined that discharges of silver iodide are too insignificant to justify national regulation.[25]

Notwithstanding, it almost goes without saying that weather-modification projects will encounter public opposition. But that goes with the territory. As one commentator put it:

> If you announce that you are going to intentionally modify the weather, you are going to have vociferous opposition. The opposition comes from adverse economic interests, religious beliefs, old wives tales, and downright superstition. Irrespective of the source, you can count on its being genuine, tough, and tenacious. This is true despite the fact that the overwhelming percentage of weather modification is done inadvertently. The

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18. *Id.* at 36.

19. *Id.* at 39.

20. E. HEMEL & C. HOLDERNESS, *supra* note 16, at 56; C. TODD & W. HOWELL, WORLD ATLAS AND CATALOG OF REPORTED RESULTS OF PRECIPITATION MANAGEMENT BY CLOUD SEEDING 1 (1985).

21. Davis, *supra* note 3, at 124.

22. WEATHER MODIFICATION ASSOCIATION, *supra* note 4, at 5.

23. E. HEMEL & C. HOLDERNESS, *supra* note 16, at 55; WEATHER MODIFICATION ASSOCIATION, *supra* note 4, at 15 ("The amounts [of silver iodide or other seeding material in precipitation] are *very, very* small. If the precipitation is collected from a seeded storm, the concentration of silver in this rainwater or snow would be less than *one part per billion!*") (emphasis in original).

24. *Cloud Seeding*, *supra* note 2, at 6.

25. 49 Fed. Reg. 33402-01 app. D(8) (1984).

> statement, "There is no such thing as natural weather," is greeted with the same scorn as the statement, "God is dead." If you are going to come aboard, you need to be prepared for a hot initiation into the procedures of the law.[26]

With this opposition and the possibility of causing great damage comes an obvious exposure to liability.

A. Weather-Modification Cases

Very few cases have addressed the liability of weather modifiers. For this reason, it is possible to survey practically all of the case law in this area. Perhaps the earliest court case alleging damages caused by weather-modification is *Dodd v. McLeod*.[27] This case arose during the late 1800s after a severe drought had made farmers in the area desperate for water. The local minister, Duncan McLeod, organized a collective prayer. An hour after the prayer, a storm system began to move in. Soon thereafter a severe thunder storm drenched the town with two inches of rainfall. The rain washed out a bridge and a bolt of lightning struck Phinneas Dodd's hay barn, burning it to the ground. Dodd had objected to the whole idea of the collective prayer, believing that it constituted an inappropriate tampering with nature. Dodd sued McLeod on the ground that the loss of the barn was a direct result of the prayers organized by McLeod. The case was ultimately dismissed on the ground that McLeod had prayed only for rain, and the lighting had been a gratuitous gift from God. Dodd had failed to prove that the prayers caused the damage to his barn.

The next case arose in 1916 when the City of San Diego hired Charles Hatfield, who claimed he could make rain by the use of chemicals. Shortly after Hatfield began work, one of the worst rainstorms in history struck the city. The rain washed out a dam causing loss of life and property damage. Almost one million dollars in claims were filed against the city. The court, however, determined that Hatfield did not cause these injuries. Rather, the storm was an act of God.[28]

The first reported decision involving "scientific" weather

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26. Kirby, *Judicial Regulation of Weather Modification*, in WEATHER MODIFICATION TECHNOLOGY AND LAW 55, 55-56 (1978).

27. Discussed in B. PARTRIDGE, COUNTRY LAWYER 77-89 (1939), and Johnson, *Legal Implications of Weather Modification: The General Legal Setting*, in WEATHER MODIFICATION AND THE LAW, *supra* note 3, at 76-77.

28. Discussed in Note, *Who Owns the Clouds?*, 1 STAN. L. REV. 43, 44 (1948).

modification was *Slutsky v. City of New York*.[29] The City of New York faced a serious water emergency. As a result the city decided to conduct experiments in artificial rainmaking.[30] Plaintiffs, owners of a year-round vacation resort near New York City, sought a temporary injunction preventing the artificial rainmaking. They claimed that the proposed experiments would cause damage to riparian owners along streams and that the effect of actual or threatened rainfall upon the resort would be harmful for business.[31] The court stated that "plaintiffs clearly have no vested property rights in the clouds or the moisture therein."[32] It went on to hold that the plaintiffs had failed to prove that the weather modification would result in any possible irreparable injury to plaintiffs. The court balanced the conflicting interests of the parties and held for the City of New York because this weather modification would promote the general welfare and public good, while the dangers the plaintiffs were exposed to were purely speculative.[33]

Samples v. Irving P. Krick, Inc.[34] was the first weather-modification case actually sent to a jury. Oklahoma City sponsored Irving P. Krick, Inc. to seed clouds on a river watershed. While it was seeding, there was a cloudburst and flood. A landowner who suffered harm from the flood sued Krick for damages on the theory that it was negligent to seed clouds under the existing conditions. The jury returned a verdict for the defendant.

In *Auvil Orchard Co. v. Weather Modification, Inc.*,[35] the plaintiff alleged that defendant's hail suppression activities had caused flash flooding which damaged plaintiff's property. The plaintiff was granted a temporary restraining order, which the court later refused to make permanent. The court relied on expert testimony that a hail prevention program had not been responsible for flash flooding. Once again, the plaintiff failed to establish causation.

The next case involving weather modification was *Adams v. California*.[36] It involved claims that the operation of silver io-

29. 197 Misc. 730, 97 N.Y.S.2d 238 (1950).
30. *Id.* at 731, 97 N.Y.S.2d at 239.
31. *Id.* at 730-31, 97 N.Y.S.2d at 239.
32. *Id.* at 731, 97 N.Y.S.2d at 239.
33. *Id.* at 731-32, 97 N.Y.S.2d at 239-40.
34. Civ. Nos. 6212, 6223, and 6224 (W.D. Okla. 1954).
35. Civ. No. 19268 (Super. Ct. Wash. 1956).
36. Civ. No. 10112 (Super. Ct. Cal. 1964). The case is discussed in Morris, *Preparation and Trial of Weather Modification Litigation*, in WEATHER MODIFICATION AND THE

dide generators in a snowpack augmentation project had increased the flow of a certain river. Subsequently, the river broke through its levees, claiming many lives and resulting in millions of dollars in damage. The case was taken to court, but the sponsor and cloud seeder were dropped from the case. The plaintiffs failed to prove that cloud seeding produced any significant increase in rainfall or snowfall in the area in question. Fortunately for them, the plaintiffs were able to recover from the state for mismanagement of the flood.

In *Pennsylvania Natural Weather Association v. Blue Ridge Weather Modification Association*,[37] defendants carried on a hail mitigation program in Fulton County. During 1964 and 1965, Fulton County experienced a severe drought. Plaintiffs sought an injunction against this hail suppression effort, claiming it caused the drought. Contrary to *Slutsky*,[38] the court said that "weather in its natural form is a natural incident of land ownership."[39] However, the injunction was denied because there had been no proof of "more than the *possibility* of future harm."[40]

Southwest Weather Research, Inc. v. Duncan[41] is the only case in which plaintiffs succeeded in proving that their losses resulted from a cloud-seeding effort. Expert witnesses were used by both the plaintiff and the defendant. As expected, the experts disagreed about causation. The trial judge relied upon the testimony of eyewitness ranchers and granted a temporary restraining order against the hail suppression program.

The preceding cases paint a grim picture for those who claim they have been injured by weather-modification activities. The primary reason plaintiffs have failed in court is that it is difficult, if not impossible, to prove causation. One commentator concluded that "[t]here may indeed often be no legal redress available to persons injured [by weather modification] under the

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LAW, *supra* note 3, at 163, and Mann, *The Yuba City Flood: A Case Study of Weather Modification Litigation*, 49 BULL. AM. METEOR. SOC'Y 690 (1968).

37. 44 Pa. D. & C.2d 749 (1968).

38. Slutsky v. City of New York, 197 Misc. 730, 97 N.Y.S.2d 238 (1950). *Slutsky* is discussed *supra* text accompanying notes 29-33 and *infra* text accompanying notes 97, 176-77.

39. Pennsylvania Natural Weather Ass'n, 44 Pa. D. & C.2d at 756.

40. *Id.* at 762 (emphasis in original).

41. 319 S.W.2d 940 (Tex. Civ. App. 1958), *aff'd sub nom. Southwest Weather Research, Inc. v. Jones*, 160 Tex. 104, 327 S.W.2d 417 (1959).

present law."[42] As a practical matter, however, litigation and the threat of litigation can adversely affect cloud-seeding activities by increasing the costs and risks associated with such activities.[43]

1. Causation

Many uncertainties and unknowns surround weather modification making it almost impossible to be certain whether any particular weather-modification activity has had any impact. As one commentator wrote, "pinning down those uncertainties is much like shoveling smoke."[44] This section discusses what plaintiffs must show in order to establish causation and the practical limitations on their ability to meet this burden.

In order to establish causation, a plaintiff must convince the court that (1) the weather-modification attempt in question actually altered the weather, (2) the modification of the weather was, in fact, the cause of the plaintiff's damage, and (3) the damage would not have occurred otherwise.[45] Because of the nature of weather modification, these factors "will ordinarily be exceedingly difficult, if not impossible, to prove."[46]

With all of today's technology (satellites, computers, and other technical wizardry) it is still virtually impossible to predict the weather in a given area at a given time, even under normal, unmodified conditions.[47] The best guidance that today's science can give us is a fairly reliable prediction that it will or will not rain.[48] Variable, irregular weather patterns are normally superimposed on one another, and rainfall usually fails to follow historical averages.[49] Thus, since it is impossible to predict exactly how much precipitation a given storm would produce in a given area without weather modification, it is equally impossible to measure the effects of weather modification.[50]

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42. TAUBENFELD, in CONTROLLING THE WEATHER, *supra* note 9, at 5.

43. Davis, *supra* note 4, at 103 ("In none of these lawsuits, were [cloud] seeders ordered to pay any damages for their activities, but in all of them, like the *Slutsky* Case, courtroom activities had adverse effects upon seeding projects.").

44. Kirby, *supra* note 26, at 57.

45. Johnson, *supra* note 27, at 85.

46. *Id.*

47. Ferdon, *Federal Weather Modification Projects: Compensating the Landowner*, 26 ARIZ. L. REV. 681, 684 (1984).

48. *Id.*

49. Davis, *supra* note 3, at 109.

50. Ferdon, *supra* note 47, at 684. *See also* Johnson, *supra* note 27, at 86:

While the effects of weather modification are impossible to measure in any specific instance, it is clear that weather modification can produce a percentage increase in precipitation in a particular area over an extended period of time.[51] This general effect of weather modification may be provable in court:

> [W]hat may be "provable" will be that over a given six-month or one-year period one-half inch of additional rain fell in a given area. It may not be possible to prove, either now or in the foreseeable future, that on a certain July 7 one inch more rain fell than would have fallen but for the weather[-]modification attempt; and even if this is provable there is the additional equally difficult task of proving that the incremental rainfall was the responsible cause of the plaintiff's loss. What may be sufficient evidence of cause and effect to justify further scientific research or even an operational weather[-]modification program may be quite inadequate to sustain a court action for damages or injunction.[52]

When a plaintiff alleges that a weather-modification program caused or contributed to a flood, it may be easier to prove causation.[53] This is because normally only proving the addition of a substantial amount of water would be needed.[54]

Since causation is so difficult to prove, courts may be powerless to act in most weather-modification situations. Thus, one may wonder "[w]hat the role of the courts will be in controlling weather-modification activities and in carrying out one of their traditional roles of allocating costs of an activity to those who reap the benefits."[55]

To confuse the issue further, weather modifiers appear to be "talking out of both sides of their mouths" when it comes to causation. They advertise their ability to enhance precipitation, but when brought to trial, they defend themselves by claiming, "We didn't do anything; prove it if you can."[56] While defending

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> The question of cause and effect is complicated by the fact that a small, artificially stimulated change in the weather is set against a confusing background of natural fluctuations of wide amplitude. Detection of anything other than a huge modulation of atmospheric processes is destined to be covered up by natural fluctuations.

Id. at 86.

51. WEATHER MODIFICATION ASSOCIATION, *supra* note 4, at 15.

52. Johnson, *supra* note 27, at 88.

53. Davis, *supra* note 3, at 108.

54. *Id.*

55. Johnson, *supra* note 27, at 89.

56. Thomas, *Observations on This Symposium*, in WEATHER MODIFICATION TECH-

themselves against damage suits, they advertise forcefully that they can, indeed, modify the weather or that they can serve as expert witnesses on either side of a case.[57] "The cynic might say that the only time one can hear a weather modifier down-playing his own success is when he is in court as a defendant in a damage suit."[58]

2. *Problems of proof*

In order to prove causation, plaintiffs must use expert witnesses, scientific data, and statistics.[59] Each of these sources of proof is problematic.

Experts in weather modification are reluctant to testify that weather modification can cause damage because they fear their testimony may retard growth in the field of weather modification and may generate professional animosity.[60] Further, if more than one expert agrees to testify for a plaintiff, their varying experiences and opinions lead to widely conflicting testimony.[61] Thus, if a plaintiff is able to locate a weather-modification expert willing to testify on his/her behalf, it is particularly difficult to establish the credibility of such an expert.

A plaintiff may also gather scientific data showing natural patterns of precipitation, stream flow, and snowpack.[62] If this information is available, it is often incomplete or inaccurate.[63] Moreover, its use in proving causation is limited due to the variability of individual clouds and storm systems.[64] Scientific data, however, is useful in establishing long-range patterns for an area.[65]

Statistics are generally not admissible in evidence since they are essentially evidence of out-of-court experiments.[66] To be admissible, experiments must be conducted under circumstances

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NOLOGY AND LAW, *supra* note 26, at 120.

57. *Id.*

58. R. DEWSNUP & D. JENSEN, *supra* note 1, at 27-28.

59. Davis, *The June 1972 Black Hills Flood and the Law*, 20 J. WEATHER MODIF. 82, 84 (1988); Ferdon, *supra* note 47, at 687.

60. Ferdon, *supra* note 47, at 687.

61. *Id.*

62. *Id.*

63. *Id.*

64. *Id. See also supra* notes 44-58 and accompanying text.

65. Ferdon, *supra* note 47, at 687.

66. Davis, *supra* note 3, at 108.

similar to those in issue.[67] Objections to relevancy are often sustained because plaintiffs are unable to demonstrate what the circumstances were at the time and location at issue.[68] Further, statistics can only be used to show tendency or probability, not causation.[69] In order to survive a directed verdict motion, plaintiff must produce some evidence directly proving the issues in contention.[70]

The problems in proving a claim against a weather modifier are further explained by Dewsnup & Jensen:

> The weather modifiers, people who are convinced that their efforts are or can be successful, often cannot agree among themselves just how successful they have been. Given the disparity of various statistical analyses of weather projects, the plaintiff faces a difficult task in convincing a jury of skeptics that the defendant is really able to make it rain when he endeavors to do so. This problem is highlighted by the difficulty in obtaining and presenting evidence. Most of the available information is in the form of statistical studies of modification projects. The methodology behind the studies must be examined in the court to establish the reliability of the statistics, then the statistics themselves must be explained to the court in a way that non-statisticians can understand. After all of this has gone on, the defendants will have their own statistician testify, and more likely than not, the jury will become confused or unconvinced. Unless the plaintiff convinces the jurors, they must find for the defendant.[71]

B. Legal Options

The various common law causes of action which may be applicable in weather-modification cases are discussed below. Several state weather-modification statutes are analyzed in light of the common law. Finally, statutory provisions are recommended that best deal with the common law and the current state of weather-modification technology.[72]

None of the legal theories available today is well geared to

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67. *Id.*
68. *Id.*
69. *Id.*
70. *See* FED. R. CIV. P. 50(a).
71. R. DEWSNUP & D. JENSEN, *supra* note 1, at 27.
72. APPENDIX.

solving weather-modification problems.[73] Perhaps this is an advantage of the common-law system:

> When a particular technology is new and trying to gain acceptance, the law almost inadvertently gives it a boost by giving the plaintiff a nearly impossible job of proof. As the technology improves, and makes new and better information available, the plaintiffs will be able to use this same information to prove that the weather[-]modification project did play a hand in the damage.[74]

In any event, if we make the determination that rights and liabilities for weather modification ought to be more clearly defined, then the current state of weather-modification law is not satisfying. Perhaps we should look to develop some type of law which will satisfy our interim needs—while weather-modification technology is still developing and maturing.[75] After the technology is developed, we can then reevaluate our laws in light of our new understanding of weather modification.[76] For the time being we must do the best we can with what we have.

1. Trespass

Liability for trespass is imposed, irrespective of whether one causes harm, if one "enters land in the possession of the other, or causes a thing or a third person to do so."[77] Weather modification involves the dissemination of seeding materials (however small) into the atmosphere by aircraft or ground-based generators.[78] The flight of an aircraft to disseminate the seeding materials will not be considered a trespass unless it enters into the immediate reaches of the air space next to the land or it interferes substantially with the owner's use and enjoyment of his land.[79] However, actual precipitation, snow or hail, or the seeding materials themselves could be held as trespasses if they fall on lands owned by others.[80]

Cases have held that dust, light, heat, and water can consti-

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73. Kirby, *supra* note 26, at 58.
74. R. DEWSNUP & D. JENSEN, *supra* note 1, at 28.
75. *Id.* at I-1.
76. *Id. See also infra* notes 222-28 and accompanying text.
77. RESTATEMENT (SECOND) OF TORTS § 158(a) (1965).
78. *Cloud Seeding*, *supra* note 2, at 6.
79. *See* RESTATEMENT (SECOND) OF TORTS § 159 (1965).
80. R. DEWSNUP & D. JENSEN, *supra* note 1, at 20-21.

tute trespasses if they venture onto lands owned by others.[81] It usually would be difficult for a court to find a trespass on the basis of seeding materials alone because the normal quantity of seeding material used in weather modification is insignificant.[82] However, the mere dissemination of seeding materials conceivably could result in trespass liability.[83]

Colorado,[84] Illinois,[85] North Dakota,[86] Utah,[87] and Wisconsin[88] have weather-modification statutes which eliminate weather modifiers' liability for trespass based on the mere dissemination of materials and substances into the atmosphere. All of these statutes are similar. The Illinois statute provides:

> Dissemination of materials and substances into the atmosphere by a permittee acting within the conditions and limits of his permit shall not give rise to the contention that such use of the atmosphere constitutes trespass.[89]

The recommended statute in the Appendix adopts a similar provision;[90] it rejects the notion that there should be liability merely for disseminating cloud-seeding agents into the atmosphere. Such liability would serve only to interfere with the development and use of weather-modification technology without significantly benefiting injured landowners.

2. Nuisance

Liability for nuisance is imposed on one whose conduct is a legal cause of an invasion of another's interest in the private use and enjoyment of land, if the invasion is intentional and unreasonable.[91] The reasonableness of an invasion is determined by balancing the gravity of harm[92] against the utility of the conduct creating the nuisance.[93] Nuisance is really a "catch-all" in the

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81. *Id. See also* Ferdon, *supra* note 47, at 688-89.
82. R. DEWSNUP & D. JENSEN, *supra* note 1, at 20-21.
83. Davis, *Weather Modification Law Developments*, 27 OKLA. L. REV. 409, 430 (1974).
84. COLO. REV. STAT. § 36-20-123(1) (1973).
85. ILL. ANN. STAT. ch. 111, § 7339(b) (Smith-Hurd 1978 & Supp. 1990).
86. N.D. CENT. CODE § 61-04.1-37.2 (1985).
87. UTAH CODE ANN. § 73-15-7 (1989).
88. WIS. STAT. ANN. § 93.35(14)(b) (West 1990).
89. ILL. ANN. STAT. ch. 111, § 7339(b) (Smith-Hurd 1978 & Supp. 1990).
90. APPENDIX § 8(A).
91. RESTATEMENT (SECOND) OF TORTS § 822 (1965).
92. RESTATEMENT (SECOND) OF TORTS § 827 (1965).
93. RESTATEMENT (SECOND) OF TORTS § 828 (1965).

law of torts which provides an interesting avenue for determining weather-modification liabilities.[94]

The development of the law of nuisance in smoke discharge cases should be looked to for the purpose of determining how the courts will handle weather-modification cases.[95] Weather modification and discharge of pollutants into the air affect neighboring landowners in much the same way.[96]

The application of nuisance law to weather modification was first considered in *Slutsky*.[97] The court stated:

> This court must balance the conflicting interests between a remote possibility of inconvenience to plaintiffs' resort and its guests with the problem of maintaining and supplying the inhabitants of the City of New York and surrounding areas, with a population of about 10 million inhabitants, with an adequate supply of pure and wholesome water.[98]

Of course, the court held for the defendant. However, the facts were not very compelling for the plaintiff. He could only speculate as to future harms, and the defendant was apparently promoting the public good.[99]

Two states have enacted statutes which consider nuisance liability for weather modifiers. Colorado[100] and Utah[101] both reject the notion that liability in nuisance could be predicated upon the mere dissemination of weather-modification agents into the atmosphere. A model Weather Modification Control Law takes a broader approach than the states have. It provides that the dissemination of weather-modification agents into the atmosphere shall not in itself give rise to any cause of action.[102]

The recommended statute provided in the Appendix to this Comment does not take a position on whether the mere dissemination of weather-modification agents into the atmosphere con-

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94. Davis, *supra* note 11, at 191.

95. Johnson, *supra* note 27, at 91-92.

96. *Id.*

97. Slutsky v. City of New York, 197 Misc. 730, 97 N.Y.S.2d 238 (1950). *Slutsky* is discussed *supra* text accompanying notes 29-33, 38, and *infra* text accompanying notes 176-77.

98. *Id.* at 731, 97 N.Y.S.2d at 240.

99. *Id.*

100. COLO. REV. STAT. § 36-20-123(1) (1973).

101. UTAH CODE ANN. § 73-15-7 (1989).

102. R. DAVIS, TEXT AND COMMENTARY FOR WEATHER MODIFICATION CONTROL LAW § 45-2436B (1976) (supported by funds provided by the United States Department of the Interior, Office of Water Research and Technology).

stitutes a nuisance. The development of nuisance law may produce attractive judicial alternatives for weather-modification law. The flexibility of balancing the harm of an activity against its utility allows courts to creatively fashion remedies to suit particular circumstances. Therefore, it would not be prudent to categorically deny this possible cause of action to all plaintiffs.

3. Negligence

In an action for negligence the plaintiff has the burden of proving that (1) the defendant had a duty to conform to the standard of care for the protection of the plaintiff, (2) the defendant breached that duty, (3) such breach is a legal cause of the harm suffered by the plaintiff, and (4) the plaintiff has in fact suffered harm of a kind legally compensable by damages.[103]

Weather modification presents unique difficulties in defining the standard of care which a weather modifier owes.[104] This standard has generally been established through expert testimony.[105] As with any experimental program using new technology, the novelty of the science makes it difficult to determine what the standard of care is.[106] The *Restatement (Second) of Torts* is of some help in determining the standard of care.[107]

In any event, if cloud seeding is undertaken during high water periods, when unusually heavy natural precipitation is expected, or if seeding is discouraged during dry conditions, then negligence may be easier to prove.[108]

Illinois,[109] North Dakota,[110] and Wisconsin[111] mention negli-

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103. RESTATEMENT (SECOND) OF TORTS § 328 A (1965).

104. R. DEWSNUP & D. JENSEN, *supra* note 1, at 23.

105. *Id.* Expert testimony in the context of weather modification is discussed *supra* notes 59-61 and accompanying text.

106. *Id.*

107. RESTATEMENT (SECOND) OF TORTS § 285 (1965).

> The standard of conduct of a reasonable man may be (a) established by a legislative enactment or administrative regulation which so provides, or (b) adopted by the court from a legislative enactment or an administrative regulation which does not so provide, or (c) established by judicial decision, or (d) applied to the facts of the case by the trial judge or the jury, if there is no such enactment, regulation, or decision.

Id.

108. R. DEWSNUP & D. JENSEN, *supra* note 1, at 23. *Cf. supra* notes 44-71 and accompanying text (the difficulty establishing causation and problems of proof may make proving causation extremely difficult).

109. ILL. ANN. STAT. ch. 111, § 7339(c) (Smith-Hurd 1978 & Supp. 1990).

110. N.D. CENT. CODE § 61-04.1-37.3 (1985).

111. WIS. STAT. ANN. § 93.35(14)(c) (West 1990).

gence in their weather-modification statutes. They only reaffirm the right to impose liability based on negligence or intentional torts. This approach is not adopted in the recommended statute because it is seen as unnecessary; courts can impose liability based on negligence without being empowered by the legislature to do so.

Negligence theory can be adapted to an unending variety of circumstances. Its flexibility and adaptability make it a potentially useful theory in weather-modification law. As technology advances, standards of care will change. At some point in the future weather-modification liability based on negligence may become a viable theory. Legislative interference in the development of negligence theory is seen as unnecessary.

4. Negligence per se

Colorado,[112] Illinois,[113] and Wisconsin[114] have adopted statutes similar to one another which make failure to comply with state weather-modification regulations negligence per se. Colorado's statute, which is representative of the others, provides as follows: "Failure to obtain a license or permit before conducting an operation, or any actions which knowingly constitute a violation of the conditions of a permit, shall constitute negligence per se."[115] The model Weather-modification Control Law also contains a similar provision.[116]

Michigan has also adopted a provision giving private parties the right to sue for violation of its weather-modification act. The law provides for exemplary damages, actual damages, and attorneys' fees.[117]

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112. COLO. REV. STAT. § 36-20-123(2)(a) (1973).

113. ILL. ANN. STAT. Ch. 111, § 7339(d) (Smith-Hurd 1978 & Supp. 1990).

114. WIS. STAT. ANN. § 93.35(14)(d) (West 1990).

115. COLO. REV. STAT. § 36-20-123(2)(a) (1973).

116. DAVIS, *supra* note 102, at § 45-2436D ("Failure to obtain a license and permit when required by this Chapter before conducting an operation or operational activities which knowingly constitute a violation of the conditions or limits of a permit, shall constitute negligence per se and shall give rise to liability for all harm caused thereby.").

117. MICH. COMP. LAWS ANN. § 295.127 (West 1984). The statute provides:

> (1) A person alleging a violation of this act or a rule promulgated pursuant to this act, may bring a civil action for appropriate injunctive relief or damages, and may bring an action for exemplary damages of not more than $500.00.
>
> (2) An action commenced pursuant to subsection (1) may be brought in the circuit court for the county where the alleged violation occurred, or for the county where the person against whom the civil complaint is filed resides or

The recommended statute adopts a provision similar to Illinois.[118] This makes it easier to obtain a recovery from those who may carry out weather-modification activities without complying with the statutes and regulations of the state. Persons harmed by such unlawful operations will not have to prove fault based on intent or negligence.[119] This encourages compliance with state weather-modification laws.

5. *Strict liability for abnormally dangerous activities*

One who engages in abnormally dangerous activities is subject to strict liability for harm to person or property, despite exercising the utmost care to prevent such harm.[120] Whether an activity is abnormally dangerous is determined by the court considering the following factors: (1) high degree of risk of harm, (2) likelihood that harm will be great, (3) inability to eliminate the risk by the exercise of reasonable care, (4) extent to which the activity is not a matter of common usage, (5) inappropriateness of the activity to the place where it is carried out, and (6) extent to which its value to the community is outweighed by its dangerous attributes.[121]

Strict liability is seen as the easiest way for injured parties to get compensation from weather modifiers.[122] If strict liability applies, it minimizes the problems of proof: "The claimant does not need to establish that the modifier intended to do any harm or that he fell below any standard of care."[123] The claimant does, however, have to establish that he/she was injured, that there was a casual relationship between the activity and the injury, and that the weather-modification activity involved was the sort that gives rise to liability without fault.[124]

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has his or her principal place of business.

(3) As used in subsection (1), "damages" means damages for injury or loss caused by each violation of this act, including reasonable attorney's fees.

118. *Compare* ILL. ANN. STAT. Ch. 111, § 7339(d) (1978 & Supp. 1990) ("Failure to obtain a permit before conducting an operation, or operational activities which knowingly constitute a violation of the conditions or limits of a permit, shall constitute negligence per se.") *with* APPENDIX § 8(B) ("Failure to obtain a license and permit before conducting an operation, or operational activities which knowingly constitute a violation of the conditions or limits of a permit, shall constitute negligence per se.").

119. Davis, *supra* note 83, at 431.

120. RESTATEMENT (SECOND) OF TORTS § 519 (1965).

121. RESTATEMENT (SECOND) OF TORTS § 520 (1965).

122. R. DEWSNUP & D. JENSEN, *supra* note 1, at 18-19.

123. Davis, *supra* note 11, at 190.

124. *Id.*

The Task Group on the Legal Implications of Weather Modification (Task Group) considered whether weather modification should be considered an abnormally dangerous activity.[125] The Task Group found that "[w]hile it is always argued that the creation of a standard of no fault liability tends to hamper the development of an industry or technology, there seems no immutable reason to favor the development of the industry and technology at the expense of those who lose therefrom."[126] Further, by making weather modifiers pay all the costs of their operations, through strict liability, states are assured that only economically feasible and efficient modifications will take place.[127] Based on this reasoning, the Task Group took the position that strict liability is appropriate for weather-modification activities.[128]

A more flexible approach was suggested by Professor Ray Jay Davis. He wrote: "[The courts] ought not to prejudge the issues and lump all types of weather modification and all kinds of activities into one [legal] category or the other."[129] He also noted that "[w]ater resources development, especially in arid and semi-arid country, usually is regarded both as natural and necessary. Hence there is authority for the proposition that flood losses associated with such development should give rise to liability only when the defendant developer has been guilty of negligence."[130] The inappropriateness of an activity to the place where it is carried on and to the extent that the community val-

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125. TAUBENFELD, *supra* note 9, at 24.

126. *Id.* at 23.

127. *Id.* This economic theory presumes too much to be workable. First, it presumes that modifiers received all the gains of modification. This presumption is not realistic. *See infra* notes 193-213 and accompanying text. Second, it presumes that the system of liability insurance fairly reflects the risks associated with weather modification. This presumption is also problematic. *See infra* notes 155-59 and accompanying text. Thus, the Task Group's suggestions should be rejected.

128. *Id.* at 24.

129. Davis, *supra* note 11, at 190.

130. Davis, *supra* note 59, at 84 (citations omitted). It is reasonable that weather-modification law be different in different parts of the country. Daddario, *Concluding Remarks on Behalf of the American Bar Association*, in WEATHER MODIFICATION TECHNOLOGY AND LAW, *supra* note 26, at 124. This is consistent with the Restatement factors listed *supra* note 121 and accompanying text.

A model water code should build in a certain amount of flexibility for states to continue to fill their own unique needs. *Id.* Thus, the statute proposed in the APPENDIX may need to be modified to reflect the individualized concerns of states. Any deviations from a model weather-modification statute should be tempered by the need for uniform standards of liability. TAUBENFELD, *supra* note 9, at 13.

ues an activity are two factors a court considers when deciding whether a particular activity is abnormally dangerous.[131] Both of these factors weigh against finding cloud seeding abnormally dangerous in arid regions of the country.

Pennsylvania[132] and West Virginia[133] have passed weather-modification statutes which contain nearly identical provisions creating strict liability in limited circumstances. Pennsylvania's statute provides:

> Any licensee who causes a drought as determined by the board shall compensate farmers for damages. Any licensee who by causing heavy downpours or storms which cause damage to lands as determined by the board shall compensate farmers and property owners for such damages.[134]

The Pennsylvania statute does not create major strict liability concerns—the state administrative board makes a finding as to whether a weather modifier caused either a drought or a heavy downpour or storm, then farmers can sue for compensation. These provisions are unique in that they empower the state administrative agency to make findings of fact and in that they only allow farmers to sue—presumably for farm-related damages. These statutes were probably the result of a compromise made with farmers concerned about the effects of weather modification.

Illinois,[135] North Dakota,[136] and Wisconsin[137] have modification statutes which explicitly declare that weather-modification activities are not abnormally dangerous and that weather modifiers are not subject to strict liability. The model Weather Modification Control Law also contains a similar provision.[138]

The recommended statute in the Appendix remains silent on the issue of strict liability for abnormally dangerous activities. The arguments made by the Task Group are compelling in a theoretical sense, but they are based on unrealistic presumptions.[139] The courts have dealt with abnormally dangerous activ-

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131. RESTATEMENT (SECOND) OF TORTS § 520(e)-(f) (1965).

132. PA. STAT. ANN. tit. 3, § 1114 (Purdon Supp. 1990).

133. W. VA. CODE § 29-2B-13 (1986) (language identical to Pennsylvania's statute except substitutes "commission" for "board").

134. PA. STAT. ANN. tit. 3, § 1114 (Purdon Supp. 1990).

135. ILL. ANN. STAT. ch. 111, § 7339(a) (Smith-Hurd 1978 & Supp. 1990).

136. N.D. CENT. CODE § 61-04.1-37.1 (1985).

137. WIS. STAT. ANN. § 93.35(14)(a) (West 1990).

138. R. DAVIS, *supra* note 102, at § 45-2436A.

139. *See supra* note 127.

ities and will likely find few weather-modification operations to be abnormally dangerous. However, if new abnormally dangerous weather-modification technologies develop or if old technologies are applied in a manner which makes them abnormally dangerous, then it seems appropriate to allow those damaged to make their claims under strict liability.

To construct a broad rule regarding strict liability ignores the complexities of weather-modification technology and could radically affect experimentation within the United States. A broad rule eliminating strict liability for weather modifiers encourages development of potentially dangerous weather-modification technology by shielding modifiers from such liability. A broad rule of strict liability for all weather-modification activity would certainly discourage experimentation and investment.

6. *Surface water law*

Another possible source of liability for weather modifiers which has received little attention is surface water law. Surface water law has often been borrowed to resolve legal problems arising from use of new technology.[140] When diffuse surface water is channeled onto neighboring property, disputes between landowners develop; many such disputes are settled in court.

Some states resolve these disputes by adopting the "common enemy" doctrine which excuses an actor from any responsibility.[141] Some follow the "civil-law" rule which imposes liability without regard to whether the person acting is at fault.[142] The

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140. Davis, *Adapting Surface Water Law to Atmospheric Water Resources Technology*, in WATER RESOURCES LAW 207, 207 (1986).

141. *Id.* at 208. The "common enemy" doctrine allows the possessor of land to protect himself/herself against surface water as best he/she can, building dikes to keep the water off his/her land or drains to cast it down onto lower lands. F. TRELEASE & G. GOULD, CASES AND MATERIALS ON WATER LAW 253 (4th ed. 1986). This doctrine makes landowners "immune" from liability for diverting their water onto another's land. Under a modification of this doctrine, however, liability has been imposed upon an upper land owner who discharged unusually large flows of water on a lower land owner. *Id.* at 254.

142. Davis, *supra* note 140, at 208. The "civil law" rule subjects "land to a servitude for the natural flow of water across it, so that a landowner cannot prevent water from coming to his land, nor may he collect it so it flows from his land in unusual quantities, or change the direction of the natural drainage." F. TRELEASE & G. GOULD, *supra* note 141, at 253. However, some courts applying the "civil law" rule have made modifications allowing a change in natural flow if damage is slight, or if the landowner is protecting himself from extraordinary flood water. *Id.* at 253-54.

The "civil law" rule in its unmodified form is comparable to strict liability discussed *supra* notes 120-39 and accompanying text.

majority of states use the "reasonable man" rule. This rule balances the reasonableness of the landowner's conduct in seeking protection against the severity of the harm caused other landowners.[143] The recommended statute in the Appendix does not attempt to incorporate surface water law into its liability structure because these approaches are similar to immunity, strict liability, and forfeiture.

C. *Affirmative Defenses*

If a plaintiff is able to prove his/her case and establish that a weather modifier is liable, the weather modifier can still prevail by proving an affirmative defense.[144] The two types of defenses or privileges particularly applicable to weather-modification activity are consent and public necessity.[145]

Consent to conduct weather-modification activities can come through agreements entered into prior to weather-modification activities taking place and will likely be an important defense.[146] The privilege of public necessity gives persons the right to protect the public from an imminent disaster by performing acts which might otherwise be tortious.[147] This privilege could be claimed when fighting a fire, drought, or maybe even hail.[148] Weather-modification activity which attempts to protect the public or relieve an emergency situation could give rise to the defense of public necessity.

D. *Remedies*

The remedies available to successful plaintiffs include injunctions, damages, and permanent damages. Although the recommended statute in the Appendix does not explicitly give a private citizen the right to obtain an injunction, "common law principles, when a suit for damages would not give an adequate relief, permit a citizen harmed or threatened with harm to ob-

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143. Davis, *supra* note 140, at 208. The "reasonable man" rule is comparable to nuisance theory which is discussed *supra* notes 91-102 and accompanying text.

144. Davis, *Options for Public Control of Atmospheric Management*, 10 DEN. J. INT'L L. & POL'Y 523, 528 (1981).

145. Introduced in RESTATEMENT (SECOND) OF TORTS § 10(2) (1965).

146. Davis, *supra* note 11, at 191.

147. Davis, *supra* note 144, at 528.

148. R. DEWSNUP & D. JENSEN, *supra* note 1, at 26.

tain a restraining order."[149] In the *Southwest Weather Research* cases[150] a temporary restraining order was actually granted.

If a weather modifier is found liable under nuisance, the court may award permanent damages.[151] "Permanent damages" amount to an easement to pollute the air or spread cloud-seeding materials over the land of a plaintiff.[152] This remedy is used primarily when the balancing of interests is in favor of continuing the nuisance, but the plaintiff is seriously damaged.[153]

Regular damages may be awarded if a weather modifier is found liable under almost any theory. But, of course, if the damage caused by the modifier is serious, the modifier may become insolvent, thus leaving many "victims" uncompensated. To insure that weather modifiers are able to pay claims for damages which they cause, most state weather-modification statutes require proof of financial responsibility before a weather modifier is issued a licence or permit.[154]

The most logical way for weather modifiers to show proof of financial responsibility is to purchase insurance. The insurance rates should not be very high since no major damage suits have been won against weather modifiers.[155] However, the insurance industry has been reluctant to venture into this new field because of the small numbers of weather modifiers and the lack of data on which to base rates.[156] In fact, many insurance companies refuse to insure weather-modification activities because of the uncertainty of the risks.[157] If weather modifiers are able to

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149. Davis, *supra* note 83, at 432-33.

150. 319 S.W.2d 940 (Tex. Civ. App. 1958), *aff'd sub nom. Southwest Weather Research, Inc. v. Jones*, 160 Tex. 104, 327 S.W.2d 417 (1959). This case is discussed *supra* text accompanying note 41.

151. R. DEWSNUP & D. JENSEN, *supra* note 1, at 29.

152. *Id.*

153. *Id.*

154. COLO. REV. STAT. § 36-20-112(1)(c) (1973); FLA. STAT. ANN. § 403.321 (West 1986); ILL. ANN. STAT. ch. 111, § 7331 (1978 & Supp. 1990); KAN. STAT. ANN. § 82a-1411(4) (1989); MICH COMP. LAWS ANN. § 295.118 (West 1984); MONT. CODE ANN. § 85-3-211 (1989); N.M. STAT. ANN. § 75-3-7 (1988); N.D. CENT. CODE § 61-04.1-19 (1985); OKLA. STAT. ANN. tit. 82, § 1087.14 (West 1990); OR. REV. STAT. § 558.010 (1989) (weather-modification district requires weather modifiers to carry $500,000 insurance); S.D. CODIFIED LAWS ANN. § 46-3A-22 (1987); WASH. REV. CODE ANN. § 43.37.150 (1983); WIS. STAT. ANN. § 93.35(7) (West 1990).

Proof of financial stability is an essential part of any licence/permit system. *See infra* notes 214-21 and accompanying text for a general discussion of the state administrative systems for allocating rights and liabilities in weather modification.

155. R. DEWSNUP & D. JENSEN, *supra* note 1, at 28.

156. *Id.*

157. Morris, *supra* note 36, at 192.

obtain insurance, they often feel that the rates are higher than they ought to be.[158] It should be noted that any change in weather-modification law could have an impact on the cost and availability of insurance.[159]

E. Immunity

Immunity from damage claims arising from weather-modification activities would seem to encourage weather modification.[160] However, such immunity likely would lead to political opposition to cloud seeding.[161] Further, immunizing the state from liability may have no practical effect because in some circumstances weather-modification damages might result in payment through private bills.[162] Further, there are constitutional limits on a state's ability to immunize itself.[163] Property damage caused by state weather-modification activities could result in an unconstitutional "taking."[164]

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158. Davis, *supra* note 11, at 192. This has led to cries for a governmentally-created insurance program. *Id.* Some have called for an indemnification program. *Id.*

159. *See id.*

160. *Id.* at 193.

161. *Id.* ("Citizens deprived of compensation for losses likely would seek anticloud [sic] seeding laws.").

162. F. MALONEY, R. AUSNESS & J. MORRIS, A MODEL WATER CODE 344 (1972).

163. *See, e.g.*, First English Evangelical Lutheran Church v. Los Angeles County, 482 U.S. 304 (1987).

164. Discussing the issue of "takings" in weather modification circumstances, Taubenfeld notes that

> [t]he U.S. Supreme Court has held that the invasion of the superadjacent airspace by aircraft, though within the federal airway, may so affect the use of land as to constitute a taking. In state cases, operating under even broader constitutional language, taking and damaging have given rise to compensable claims. It is permissible for a government body to "take" or "damage" property rights, but appropriate payment must be made to the property owner affected. The responsibility of a government for losses caused by its weather-modification activities should also be considered in light of the loss-distribution scheme presently compelled by the federal and state constitutions. Thus it would be permissible for governmental bodies or their agents to modify the weather on a continuous basis, but only if they compensate landowners whose property is thus taken or permanently injured by such modification.

TAUBENFELD, *supra* note 9, at 6. Whether or not there is a property right in the weather,

> it is clear that property owners normally have a capital investment in their weather, and any imposed damages to the value of their property is really similar to a "taking." Weather modification is likely to produce such events. These are unlikely to be politically popular. Those who favor a relatively free development of weather modification will have to consider if it is not ultimately in their interest to favor an absolute standard of liability or at least to provide for securely arranging full compensation for losses imposed without a showing of negligence.

The doctrine of state sovereign immunity is a derivation from the ancient concept that the King could do no wrong.[165] It has been persuasively argued that this outdated concept should not apply to weather modification; since the state receives the benefit of weather modification, the state should also be liable for losses caused by its operations.[166]

Colorado is the only state which declares that the state and its agents and officers are immune from liability for weather-modification operations approved or conducted by them.[167] Illinois,[168] Michigan,[169] North Dakota,[170] Washington,[171] Wisconsin,[172] and Wyoming[173] have statutes which expressly state that nothing in the act should be construed to impose or except liability for certain groups. These statutes may leave in force general state sovereign immunity laws but do not create new ones.

The recommended statute adopts the approach of the majority of states that have addressed this issue.[174] Each state must determine its own sovereign immunity based upon broader policy consideration than those encompassed in weather modification. By leaving these broader policy considerations to the individual state legislatures, the recommended statute should encounter less political opposition.

II. Property Rights in Natural Weather: Who Owns the Clouds?

Very little law has developed to answer the question, "Who owns the clouds?"[175] Only three cases have touched upon the issue and their conclusions are inconsistent. Before meaningful

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Id. at 11. Property rights in natural weather are discussed *infra* 175-91 and accompanying text.

165. F. Maloney, R. Ausness & J. Morris, *supra* note 162, at 344.

166. *Id.*

167. Colo. Rev. Stat. § 36-20-122 (Supp. 1989) ("The state and its agencies, counties, and municipalities, all other public entities within the state, and the officers and employees thereof are immune from liability resulting from any weather[-]modification operations approved or conducted by them under the provisions and limitations of this article.").

168. Ill. Ann. Stat. ch. 111, § 7338 (Smith-Hurd 1978 & Supp. 1990).

169. Mich. Comp. Laws Ann. § 295.124 (West 1984).

170. N.D. Cent. Code § 61-04.1-36 (1985).

171. Wash. Rev. Code Ann. § 43.37.190 (1983).

172. Wis. Stat. Ann. § 93.35(13) (West 1990).

173. Wyo. Stat. § 9-1-909 (1987).

174. Appendix § 9.

175. Davis, *supra* note 11, at 185.

development can take place in the common law, we must determine what property interests a landowner has in unmodified weather.

The first case to discuss property rights in clouds was *Slutsky*.[176] The court did not go through any analysis before ruling on this issue. It simply concluded that "[property owners] clearly have no vested property rights in the clouds or the moisture therein."[177]

Next came *Southwest Weather Research, Inc. v. Rounsaville*.[178] After surveying several sources, the court announced: "We believe that under our system of government the landowner is entitled to such precipitation as Nature designs to bestow. We believe that the landowner is entitled, therefore and thereby, to such rainfall as may come from clouds over his own property that Nature, in her caprice, may provide."[179] The court then went on to limit this assertion:

> We do not mean to say or imply at this time or under the conditions present in this particular case that the landowner has a right to prevent or control weather modification over land not his own. We do not pass upon that point here, and we do not intend any implication to that effect.[180]

The last case considering property rights in natural precipitation is *Pennsylvania Natural Weather Association*.[181] This court considered both of the above cases and reasoned that inherent in ownership of land is the right to use it; the right to use land without the right to use it in its natural condition is valueless.[182] The court stated:

> It seems to us that one of the elements of land in its "natural condition" must be weather in its natural form, including all forms of natural precipitation. . . .
>
> If we conclude that weather in its natural form is a natural incident of land ownership, it also follows that we must con-

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176. Slutsky v. City of New York, 197 Misc. 730, 97 N.Y.S.2d 238 (1950).

177. *Id.* at 731, 97 N.Y.S.2d at 239.

178. 320 S.W.2d 211 (Tex. Civ. App. 1958), *aff'd sub nom. Southwest Weather Research, Inc. v. Jones*, 160 Tex. 104, 327 S.W.2d 417 (1959).

179. *Rounsaville*, 320 S.W.2d at 216.

180. *Id.*

181. Pennsylvania Natural Weather Ass'n v. Blue Ridge Weather Modification Ass'n, 44 Pa. D. & C.2d 749 (1968). *Pennsylvania Natural Weather Ass'n* is discussed *supra* text accompanying notes 37-40.

182. *Id.* at 756.

clude that a landowner has some "right" in the clouds, or more specifically, in the moisture in the clouds.[183]

Only the narrow issue of the right of landowners to obtain injunctive relief against cloud seeding was addressed in these cases. They offer little practical guidance because they contradict each other and their general rules have not yet been developed.

Natural rights is probably the soundest approach to take when attempting to establish a property interest in clouds.[184] Natural rights make sense because the value of property is, in part, dependent upon the weather around it.[185] Thus, an uncompensated imposition of worsened weather which would affect the value of the property would be a taking and would require compensation by the government and damages by private parties.[186]

If natural rights to the atmosphere were recognized, however, it would be very inconvenient for future weather modifiers.[187] It is impossible to determine what "natural weather" is.[188] The National Science Foundation and the National Academy of Sciences strongly discourage statutes including a particular theory of property rights.[189]

Application of different theories could be used to answer the question of whether there are, or ought to be, property rights in the atmosphere.[190] "It seems the question could be answered either way through the use of existing law and based on sound reasoning."[191] Thus, the recommended statute in the Appendix

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183. *Id.*

184. R. DEWSNUP & D. JENSEN, *supra* note 1, at 41.

185. TAUBENFELD, *supra* note 9, at 23.

186. *Id. See also supra* notes 163-64 and accompanying text.

187. *Id.* ("If the landowner uses the water, the burden is then on the modifier to prove that the use was improper because the waters were derived from weather-modification activity. The modifier may have a great deal of difficulty in proving his case.").

188. F. MALONEY, R. AUSNESS & J. MORRIS, *supra* note 162, at 321:

> [A]uto exhaust or industrial pollution, unintentionally alter[s] the climate and/or atmosphere. It has been shown that both auto exhaust and industrial atmospheric and liquid emissions can have this effect. Any human dwelling has some slight effect on the microclimate surrounding it; irrigation canal construction increases the humidity of the region; smog often reduces by one-fourth the heat reaching the ground.

Id. at 321.

189. *Id.* at 295 (the lack of common experience, coupled with the limited precedent these organizations fear that a statute incorporating one particular theory would become unnecessarily restrictive).

190. R. DEWSNUP & D. JENSEN, *supra* note 1, at 44.

191. *Id.*

has not taken a position on atmospheric water rights. Opting for or against landowners having atmospheric water rights is reasonable and either choice seems to be political suicide.

III. Weather Modifiers' Rights in Water Produced

What's all the fuss about? What motivates people to fly around in airplanes spraying out silver iodide? *Water*! Weather modifiers want more, landowners want more, and states want more. It is surprising that with the apparent importance of the issue of who owns the water generated by weather modification, how little attention it has received in state weather-modification laws.[192] Perhaps it is even more surprising that there are no cases dealing with weather modifiers' claims to water allegedly developed by them.[193]

Perhaps weather modifiers know the limits of their proof. It is ironic that weather modifiers face the same difficult problem of "proving" a specific increase in precipitation as was mentioned earlier with respect to plaintiffs proving liability.[194] Proof of water rights and liabilities in weather modification are really two sides of the same coin. As soon as modifiers are able to establish rights in the waters they develop, they may be bombarded with liability claims.

The theory under which weather modifiers will claim rights in the waters they claim to produce is straightforward. Its application, however, may prove to be even more problematic than plaintiffs establishing liability.

If weather modification results in "new water not previously part of the river system" it is known as developed water.[195] This developed water goes to the developer to use or store.[196] Concep-

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192. *Id.* at 65.

193. Davis, *supra* note 11, at 185. *See also supra* notes 27-43 and accompanying text.

194. R. Dewsnup & D. Jensen, *supra* note 1, at 38. *See also supra* notes 44-76 and accompanying text.

195. Fischer, *Weather Modification and the Right of Capture*, 8 Nat. Resources Law. 639, 644-645 (1975).

196. *Id. See also* R. Dewsnup & D. Jensen, *supra* note 1, at 36-37.

Modifiers may claim water using arguments similar to those employed by other resource developers:

> Weather modifiers may claim the benefits of their upwind or upstream modification using arguments like those employed by other resource developers. "We were there first; we expended our capital and developed this additional water source. Through us the community benefits. We are entitled to protection, for without it there is inadequate incentive to develop the resource." Similar logic

tually, if a weather modifier can prove that it has actually developed the water, it has the most senior right to the newly-developed water.[197] The problem a modifier will have is in proving its activities resulted in a specific increase in water over natural stream flow.[198] If a modifier can satisfactorily prove a specific increase, then it is entitled to such increase.

The practical problems of proof and obstacles which a weather modifier will have to overcome are described by one commentator:

> Decades of effort and much treasure have been expended by

> has been persuasive in states following the doctrines of prior appropriation of ground and surface waters. These arguments underlie the law concerning developed and salvaged waters. They also have an important bearing upon oil and gas law and mining law.

Davis, *supra* note 11, at 184 (footnotes omitted).

However, physical differences between atmospheric resources and other natural resources make this analogy somewhat weak:

> Judicial reliance upon precedents which recognize the interest of developers of ground and surface waters and of oil, gas, and mineral deposits would have to take into account [sic] the physical differences between these resources and atmospheric water resources. Winds shift more readily than do stream courses; the atmosphere is a more immediate part of the environment of the community than are subsurface minerals or subterranean waters; and measurement of the extent of any rights recognized in the clouds involves more difficult technical problems than determining the quantity of other resources which may legally be extracted.

Id.

It has been suggested that weather modifiers could stipulate and agree to certain flows by virtue of their weather-modification activities. This idea is also problematic:

> Another alternative that could be tried would be a stipulation or agreement by all the water users on a stream that a certain percentage of the water in the stream each year will be considered developed water, and that its use belongs to the weather modification project's sponsors. Such an agreement, if it were practically possible, would settle the potential conflicts in advance, and circumvent the problems of proof. There would be enormous difficulties in this approach. It would require a great deal of faith in the weather modifiers—far more faith than the technology deserves at this stage of the game. Further, any such agreement would have to let the weather modifier take his agreed upon share "off the top" because, by agreeing that it is developed water, the other parties to the agreement would give the developer a superior right. If the project proved successful, the existing rights would be unchanged, or possibly they would have more water available than they normally would. But if the project failed, the developer would still have a right to the agreed-upon percentage of the water in the stream. Few, if any, water users would be willing to gamble with their water rights on the basis of a science that remains inexact.

R. DEWSNUP & D. JENSEN, *supra* note 1, at 14.

197. R. DEWSNUP & D. JENSEN, *supra* note 1, at 37.

198. *See supra* notes 44-76 and accompanying text for a discussion of the problems associated with proving a specific increase in precipitation over natural streamflow.

present appropriators to create farms, ranches, factories, businesses, and cities which are absolutely dependent upon a recognition of their appropriative water rights. The Courts will be vigilant in protecting them against unfounded and avaricious claims. Thus, when the developer seeks judicial blessings of his efforts he must expect to answer questions such as these:

1) How do we know that the increased snowfall which you claim would not have occurred naturally and absent your efforts?
2) Even assuming that increased snowfall did occur, how can you demonstrate that the induced snowfall was as great as you claim?
3) Assuming the snowfall depths are as you claim, how do we know how much water from the increased snowfall will flow into the streams and be available for diversion, as opposed to being evaporated, or lost by transpiration, or become part of the groundwater which may not surface for months or even years?
4) How do we know that the water which does ultimately reach the stream is available in time and amount for the proposed diversion or impoundment?[199]

This is a heavy burden and a proper one.[200]

It should be noted that it is easier to claim water harvested through past weather modification than it will be to protect future harvests from interference.[201] "There is no guarantee that atmospheric conditions will repeat themselves so that future cloud seeding will bring about results similar to past weather-modification efforts."[202] Indeed, one can imagine having to go to court continuously to protect waters currently being generated by weather modification.

Many states have statutes which assert sovereign ownership of atmospheric waters.[203] The state of Montana asserts ownership of atmospheric resources through its constitution.[204] These provisions do not allocate water rights. Rather, they are merely

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199. Fischer, *supra* note 195, at 645-46.

200. *Id.* at 645.

201. Davis, *supra* note 11, at 185.

202. *Id.*

203. COLO. REV. STAT. § 36-20-103 (1973); LA. REV. STAT. ANN. § 2201 (West 1961); MINN. STAT. ANN. § 42.03 (West 1947); N.M. STAT. ANN. § 75-3-3 (1988); N.D. CENT. CODE § 61-04.1-01 (1985); S.D. CODIFIED LAWS ANN. § 46-3A-2 (1987); WYO. STAT. § 9-1-905(a)(i) (1987).

204. MONT. CONST. art. IX, § 3(3).

intended to be the basis for the exercise of the state's regulatory power.[205] The recommended statute contains a similar provision.[206]

The right to use the water developed through weather modification may be inherent in all of the state weather-modification legislation.[207] However, none of the statutes has expressly provided that weather modifiers have prior right to the moisture they develop. California[208] and Utah[209] have declared that waters developed through weather modification will be distributed as if they were natural precipitation. As a practical matter, landowners where moisture falls are in a strong position to assert ownership over those waters. If the landowner uses the water, then the modifier must prove that the landowner's actions were improper because the waters were derived from weather-modification activity.[210]

The recommended statute adopts the California and Utah approach of distributing water developed through weather modification as if it had occurred naturally.[211] Admittedly, this approach may reduce the incentive for sponsors to resort to cloud seeding.[212] However, this approach actually reflects the present realities in weather-modification law: "Until the science of weather modification can offer some concrete proof of its effectiveness, and measure the effectiveness, any increased rainfall so produced almost certainly will be considered part of the natural yield which will be distributed in accordance with established

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205. Davis, *supra* note 144, at 527.

206. APPENDIX § 3.

207. Davis, *State Regulation of Weather Modification*, 12 ARIZ. L. REV. 35, 43 (1970).

208. CAL. WATER CODE § 401 (West Supp. 1990) ("It is hereby declared that atmospheric water within the state which is caused to fall by weather resources management activities shall, for the purpose of water rights determinations, be considered as if it occurred as natural precipitation.").

209. UTAH CODE ANN. § 73-15-4 (1989) ("All water derived as a result of cloud seeding shall be considered a part of the natural water supply of the basin in the same sense as if no cloud[-]seeding operations had been conducted, and any water so derived shall not be subject to new appropriations but shall be administered and distributed to users on the stream system in accordance with existing water rights.").

210. Davis, *supra* note 11, at 187. Weather modifiers would have an extremely difficult time proving they caused any particular increase in rainfall. *See supra* notes 44-71 and accompanying text. (discussion of causation and the problems of proof).

211. APPENDIX § 7.

212. Davis, *supra* note 83, at 433. It also reduces the incentive to collect accurate information regarding weather modification. This could prove disadvantageous to those asserting claims against weather modifiers.

rights."[213] It also has the benefit of reducing uncertainty and litigation over the amount of water appropriated through cloud seeding. Further, there are still ample incentives for appropriators with junior rights, landowners, governments, water districts, and researchers to sponsor cloud seeding. If weather-modification technology develops to the point that it would be advantageous to give modifiers rights in the waters they develop, then the law can be changed.

IV. THE ADMINISTRATIVE SOLUTION

The limitations of the judicial system in the area of weather modification have brought about the creation of administrative agencies.[214] These agencies endeavor to carry out some of the functions that the courts find either impossible or impracticable to fulfill.[215] Due to problems in proof and the difficulties associated with establishing causation, the courts have been unable to allocate the costs and benefits of weather-modification activities.[216]

Administrative agencies are particularly well suited for dealing with weather-modification problems. Agencies are likely to be staffed with experts in the field of weather modification and are much more flexible than legislators.[217] A flexible, well-informed approach seems appropriate for dealing with evolving technologies such as weather modification.

The typical state weather-modification statute calls for: (1) the licensing of the operator or the project; (2) a showing that

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213. R. DEWSNUP & D. JENSEN, *supra* note 1, at 40.

214. Johnson, *supra* note 27, at 90. Nebraska and Utah have responded by creating weather-modification districts. NEB. REV. STAT. § 2-2401 (1987) (weather-modification district); UTAH CODE ANN. § 73-15-1 (1989) (Division of Water Resources).

215. Johnson, *supra* note 27, at 90.

216. *See supra* notes 44-76, 192-213 and accompanying text.

217. E. HEMEL & C. HOLDERNESS, *supra* note 16, at 101:

> [A]dministrative agencies are likely to be headed and staffed by experts. Many members of a weather modification regulatory agency will have expert knowledge about cloud-seeding and its consequences before their appointments; those who don't are likely to develop considerable expertise during their tenure. Additionally, weather modification agencies are more likely than legislatures to employ meteorologists, ecologists, hydrologists, and engineers, who are professionally trained to design and maintain effective regulatory programs.

Id. at 101; Davis, *supra* note 83, at 421 ("[I]t is easier to change administrative rules than it is to amend statutes. In addition, the odds favor a group of experts knowledgeable in the field over a state legislature which is unlikely to have many members with a scientific, engineering, or technological background to make better rules.").

the operator is scientifically qualified; (3) a showing that the principal parties in the project are financially able to pay damages for potential liability; and (4) an evaluation of their operations filed with the appropriate state agency.[218] Agencies are not preoccupied with allocating the costs and benefits of past weather-modification activities; rather, they issue or deny licenses and permits through the exercise of their administrative discretion.[219] Through this discretion, agencies can distribute the potential costs and benefits of weather modification by determining what type of weather-modification activities can take place and what property is affected.[220]

The recommended weather-modification statute does not attempt to endorse provisions creating administrative agencies or licencing and permit systems.[221] However, it is recommended that a licencing and permit system be included in any comprehensive weather-modification code. Such a system is essential for present control over weather-modification rights and liabilities. As weather-modification technology advances and the judicial system becomes better able to deal with weather modification issues, the importance of such administrative systems may diminish.

V. THE FUTURE OF WEATHER MODIFICATION

The science of weather modification has not yet been fully developed.[222] The steps taken today are nothing more than in-

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218. R. DEWSNUP & D. JENSEN, *supra* note 1, at 11. The following citations are to state weather-modification statutes which have a licence/permit system: ARIZ. REV. STAT. ANN. § 45-1601 (1980); CAL. WATER CODE § 400 (West 1977 & Supp. 1990); COLO. REV. STAT. § 36-20-101 (1973); FLA. STAT. ANN. § 403.301 (West 1986); ILL. ANN. STAT. ch. 111, § 7301 (1978 & Supp. 1990); IND. CODE ANN. § 13-1-1.5-1 (Burns 1987); KAN. STAT. ANN. § 82a-1401 (1989); LA. REV. STAT. ANN. § 2201 (West 1961); MICH. COMP. LAWS ANN. § 295.101 (West 1984); MINN. STAT. ANN. § 42.01 (West 1947); MONT. CODE ANN. § 85-3-201 (1989); N.M. STAT. ANN. § 75-3-1 (1988); N.D. CENT. CODE § 61-04.1-01 (1985); OKLA. STAT. ANN. tit. 82, § 1087.1 (West 1990); OR. REV. STAT. § 558.010 (1989); PA. STAT. ANN. tit. 3, § 1101 (Purdon Supp. 1990); S.D. CODIFIED LAWS ANN. § 46-3A-1 (1987); WASH. REV. CODE ANN. § 43.37.010 (1983); W. VA. CODE § 29-2B-1 (1986); WIS. STAT. ANN. § 93.35 (West 1990); WYO. STAT. § 9-1-907 (1987).

Statutes which require weather modifiers to show proof of financial responsibility before obtaining a licence/permit are listed *supra* note 154.

219. Davis, *supra* note 11, at 201.

220. *Id.*

221. These intricacies are beyond the scope of this article. However, they are discussed in 4 J. CASTLEBERRY, R. DAVIS, R. HARNSBERGER & R. SWENSON, WATERS AND WATER RIGHTS §§ 359-360 (1970 & Supp. 1978).

222. R. DEWSNUP & D. JENSEN, *supra* note 1, at I-1.

terim measures designed to make the trip into the future a little less bumpy. When weather-modification technology is refined to the point that its effects can be measured with precision, the state legislatures will once again be called upon to formulate policies, procedures, and institutional mechanisms to more fully regulate a matured science.[223]

Scientists are on the verge of getting nearly incontrovertible evidence of rain production by cloud seeding.[224] As better instrumentation and information becomes available, proof of causation should become much simpler.[225] As the science improves, litigation will increase and more plaintiffs will be successful.[226]

Experience, rather than logic, has shaped weather-modification law.[227] The statute recommended by this Comment is merely one step toward developing a comprehensive weather-modification law. It should provide weather modifiers with the needed incentives to continue to develop weather-modification technology and provide the courts with the tools needed to fashion new legal theories to protect the interests of all parties affected. Ultimately, solutions to the problems arising from weather-modification law require new and imaginative guidelines and the establishment of basic concepts not yet imagined.[228]

CONCLUSION

Due to problems in proof and the difficulties in establishing causation, the courts are unable to provide any meaningful relief for those who claim to be injured by weather modification. Weather modifiers face similar difficulties establishing rights in water created through weather modification. The question of property rights in "natural weather" cannot be resolved with the limited guidance given by the courts thus far.

The only meaningful control over weather-modification rights and liabilities is provided through state administrative agencies. These agencies simply exercise their discretion to issue

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223. *Id.*

224. Orville, *The 11th Conference on Weather Modification*, 69 BULL. AM. METEOR. SOC'Y 406, 406 (1988).

225. Davis, *supra* note 3, at 109.

226. Davis, *supra* note 11, at 189; Booker, *The Future of Weather Modification*, in WEATHER MODIFICATION TECHNOLOGY AND LAW, *supra* note 26, at 39.

227. Davis, *supra* note 4, at 105.

228. Henderson, *supra* note 5, at 73-74.

licenses and permits to achieve whatever distribution of costs and benefits they deem proper. This is the best we can do today.

In the future, new and improved technology will help the courts sift through the difficult issues presented by weather modification. In the meantime, state legislatures should provide those impacted by weather modification with as much guidance as possible.

Gregory N. Jones

APPENDIX

Recommended Weather Modification Statute

§ 1. SHORT TITLE

This Act shall be known as the "Cloud Seeding Liabilities and Water Rights Act."

§ 2. DECLARATION OF PURPOSE

The legislature of (name of state) declares that weather modification affects the public health, safety and welfare and the environment, and is subject to regulation and control in the public interest. Properly conducted weather-modification operations can improve water quality and quantity, reduce losses from weather hazards and provide economic benefits for the people of the State. Therefore weather-modification operations and research and development shall be encouraged to the extent practicable. In order to minimize possible adverse effects, weather-modification activities shall be carried on with proper safeguards, and accurate information concerning such activities shall be recorded and reported to the (appropriate agency).

§ 3. DECLARATION OF RIGHTS

The legislature of (name of state) declares that the state of (name of state) claims the right to all moisture suspended in the atmosphere which falls or is artificially induced to fall within its borders. This moisture is the property of the people of this state, dedicated to their use as provided by law. Further, the state of (name of state) further declares that it claims the prior right to increase or permit the increase of precipitation by artificial means for use in (name of state).

§ 4. Definitions

As used in this Act, unless the context otherwise requires:

(A) "Department" means the (appropriate agency).

(B) "Director" means the Director of (appropriate agency).

(C) "Board" means the Weather Modification Board appointed pursuant to this act.

(D) "Weather modification" means any activity intended to induce artificial changes in the composition, behavior, or dynamics of the atmosphere.

(E) "Person" means an individual, partnership, or public or private corporation or agency, except where the context indicates that "person" is used in the sense of a living individual.

(F) "Operation" means the performance of any weather-modification activity undertaken for the purpose of producing or attempting to produce any form of modifying effect upon the weather within a specified geographical area over a specified time interval.

§ 5. Records and reports

(A) In order to effectuate the purposes of this Act, the Department shall make reasonable rules and regulations requiring persons conducting weather-modification operations in (name of state) or elsewhere by undertaking operations within (name of state), to make reports to the Department in the manner and form required by the Department.

(B) Record and report forms may be developed by the Department which will facilitate reporting data regarding weather-modification operations.

(C) The records and reports which are in the custody of the Department and which have been filed with it under this Act or under the rules and regulations made under this Act shall be kept open for public examination as public documents.

§ 6. Interstate compacts

The Department may represent the State in negotiations, procedures or plans for interstate compacts relating to weather modification.

§ 7. Rights to additional waters

It is hereby declared that atmospheric water within the state which is caused to fall by weather-modification activities shall, for the purpose of water rights determinations, be considered as if it occurred as natural precipitation.

§ 8. LIABILITY

(A) Dissemination of materials and substances into the atmosphere by a permittee acting within the conditions and limits of a permit shall not give rise to the contention that such use of the atmosphere constitutes a trespass.

(B) Failure to obtain a license and permit before conducting an operation, or operational activities which knowingly constitute a violation of the conditions or limits of a permit, shall constitute negligence per se.

(C) Nothing in this Act shall prevent any person adversely affected by a weather-modification operation from obtaining an injunction or pursuing other means of relief.

(D) The fact that a person holds a license or was issued a permit under this Act, or that he has complied with the rules and regulations made by the Department pursuant to this Act, is not admissible as a defense in any legal action which may be brought against him.

§ 9. STATE IMMUNITY

Nothing in this Act, shall be construed to impose or accept any liability or responsibility by the State, its agencies and the officers and employees thereof for any injury caused by any persons who conduct weather-modification operations.

§ 10. PENALTY FOR VIOLATIONS

Any person violating any of the provisions of this Act or of any valid rule or regulation issued under this Act is guilty of a misdemeanor, and each day such violation continues constitutes a separate offense.

§ 11. SUITS TO RECOVER FINES, PENALTIES OR FEES

All suits for the recovery of any of the fines, penalties or fees prescribed in this Act shall be prosecuted in the name of the "People of the State of (name of state)," in any court having jurisdiction. If proper complaint is made, it shall be the duty of the state Attorney General to prosecute all persons violating the provisions of this Act. All fines, penalties and fees collected under the provisions of this Act shall inure to the Department.

§ 12. INJUNCTION TO RESTRAIN VIOLATIONS

The Department may, in its discretion, apply to a court of competent jurisdiction over the parties and subject matter, for a writ of injunction to restrain violations of the provisions of this Act.

§ 13. PARTIAL INVALIDITY

If any portion of this Act is held invalid, such invalidity shall not affect any part of this Act which can be given effect without the invalid portion.