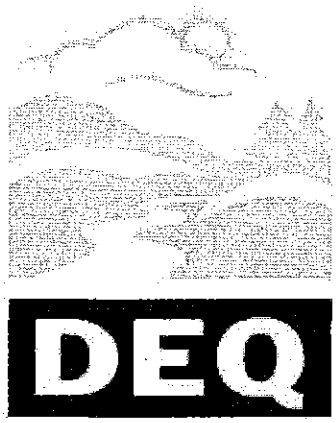
8/6/1979

OREGON
ENVIRONMENTAL QUALITY
COMMISSION MEETING
MATERIALS



State of Oregon
Department of Environmental Quality

THESE MINUTES ARE D R A F T AND SUBJECT TO THE APPROVAL OF THE EQC

SPECIAL ENVIRONMENTAL QUALITY COMMISSION MEETING

August 6, 1979

Room 50
State Capitol Building
Salem, Oregon

On Monday, August 6, 1979 the Environmental Quality Commission convened a special meeting in Room 50 of the State Capitol Building, Salem, Oregon.

Present were all Commission Members: Chairman Joe B. Richards, Mr. Ronald M. Somers, Mr. Albert H. Densmore. and Mr. Fred J. Burgess. Present on behalf of the Department were its Director, William H. Young, and several members of the Department staff.

FIELD BURNING - EQC RESPONSE TO GOVERNOR'S EXECUTIVE ORDER

On July 31, 1979, Oregon Governor Victor Atiyeh issued an Executive Order which read in part:

"IT IS HEREBY ORDERED THAT:

The provisions governing open field burning, including the 50,000 acre burning limit in the present Oregon State Implementation Plan, be suspended on a temporary emergency basis, pursuant to Section 110(g) of the Federal Clean Air Act and under the authority of Oregon law. The Department of Environmental Quality is directed to implement smoke management controls using the most advanced techniques, including those proven successful during the 1978 burning season, and employing the best burning practices. The Department shall not authorize in excess of 180,000 acres for open field burning. The Department shall submit to me weekly reports with sufficient data so the Governor can determine whether this order should be continued.

This order shall terminate upon the order of the Governor, and in any event by the 120th day following the date hereof."

/s/ Victor Atiyeh
GOVERNOR

The Commission acknowledged the Governor's Executive Order that in 1979 the Department conform to administrative rules adopted by the Commission in December 1978, June 1979 and further rules adopted at this meeting.

After testimony was received from the City of Eugene, Oregon Grass Seed Grower's Association and Legal Advocates, Inc., it was MOVED by Commissioner Somers, seconded by Commissioner Densmore, and carried unanimously that the following amended Director's Recommendation be approved.

Director's Recommendation

Based on the Summation in the staff report, it is recommended that the Environmental Quality Commission take the following action:

1. Acknowledge Executive Order 79-14 and direct the staff to comply with that part of the Oregon State Implementation Plan revision applying to field burning as submitted to date and as further modified as a result of this August 6, 1979 meeting.

2. Direct the staff to respond to the EPA to correct items 1 through 4 in the Summary.

3. Instruct the Department to evaluate the performance standard proposed by the City of Eugene for the 1979 field burning season, and to assess such performance standard or other performance standards as may be developed. Futher instruct the Department to develop such a performance standard if found acceptable in light of state and federal law and the needs of the smoke management program.

4. Adopt the following rule amendments as temporary rules finding that failure to modify these rules would result in serious prejudice to the public interest or the interest of the parties involved.

   26-015(1)(c) - Prohibition Conditions: Either (A) forecast northerly winds and a mixing depth of 3,500 feet or less; or (b) forecast northerly winds and a relative humidity greater than 50 percent or forecast southerly winds and relative humidity greater than 65 percent.

   26-015(4)(e)A) - Except when the mixing depth is 5,000 feet or greater, all annual grass seed crops and cereal crops shall be burned using into-the-wind striplighting; all perennial grass seed crops shall be burned using perimeter burning methods.

   26-015(4)(d)(B) - No south priority acreage shall be burned upwind of the Eugene-Springfield Nonattainment Area.

5. Direct the staff to take necessary measures to include in the State Implementation Plan (SIP) the additional rules adopted by the Commission.

6. Request a staff report on the progress being made to study public health effects of field burning smoke.

There being no further business, the meeting was adjourned.

Respectfully submitted,

Carol A. Splettstaszer
Recording Secretary

PUBLIC SUMMARY OF ENVIRONMENTAL QUALITY COMMISSION'S ACTIONS RELATIVE TO FIELD BURNING REGULATIONS, AUGUST 6, 1979, SALEM, OREGON

The Environmental Quality Commission in response to an Executive Order of Governor Atiyeh (EO-79-14) took the following actions at their special meeting August 6, 1979 in Salem:

1. Acknowledged the Governor's Executive Order that in 1979 the Department conform to administrative rules adopted by the Commission in December 1978 and June 1979, and further rules adopted at the August 6 meeting.

2. Adopted additional temporary rules that:

   A. Increase prohibitions on burning by prohibiting burning when: (1) winds are northerly and the mixing height is less than 3,500 feet; (2) winds are northerly and the relative humidity is greater than 50%; and (3) when winds are southerly and the relative humidity is greater than 65%.

   B. Require specific burning techniques on certain crops when the mixing height is less than 5,000 feet. (Into-the-wind striplighting of annual grass seed crops and cereal grains; perimeter lighting of perennial grass seed crops.)

   C. Prohibit burning of acreage close to Eugene (South Priority Acres) when a field is upwind of the City.

3. Adopted a staff recommendation to evaluate so-called "performance standard" approach to controlling field burning. The performance standard would allow a progressive tightening of field burning regulations as serious smoke intrusions into the Eugene-Springfield area increased.

4. Directed the Staff to take necessary measures to include in the Federal State Implementation Plan (SIP) the additional rules adopted by the Commission.

5. Requested a staff report on the progress being made to study public health effects of field burning smoke.

Environmental Quality Commission

522 S.W. 5th AVENUE, P.O. BOX 1760, PORTLAND, OREGON 97207 PHONE (503) 229-5696

MEMORANDUM

TO: Environmental Quality Commission

FROM: Director

SUBJECT: Special Environmental Quality Commission Meeting on Field Burning, August 6, 1979

Response to Requested Rule Revision

Background

The Environmental Quality Commission (EQC) adopted rules regarding field burning during 1979 at its December, 1978, meeting after proper notice and public hearing. Rules adopted at that meeting were largely based upon temporary rules in effect during the 1978 season. Those changes which were adopted were proposed to simplify program operation and provide a more equitable opportunity to burn to seed growers in some South Valley priority areas.

An additional permanent rule change was adopted in April to establish a 7,500 acre limit on experimental burning during 1979. In June, the EPA requested clarification of certain rule provisions. These were addressed, in part, through adoption of temporary rules. Rule language was clarified and a rule adopted to require the use of perimeter lighting or striplighting thus complying with Federal requirements for continuous emission controls. A public hearing is scheduled for the August 31, 1979, EQC meeting to consider these temporary rules for adoption as permanent rules.

As a result of recent action by the City of Eugene to enforce the current Oregon State Implementation Plan (SIP) and thereby restrict open field burning to 50,000 acres during 1979, Governor Atiyeh has taken action through executive order (Attachment 1) set aside provisions of the current SIP. Governor Atiyeh took such action under authority granted in nt Section 110(g) of the amended Clean Air Act which allows a pending SIP revision to be substituted for the existing SIP when approval by the Environmental Protection Agency is not anticipated within four months of submittal. Since approval of Oregon's field burning SIP submittal was not anticipated until December, and since delay was deemed to result in increased unemployment and financial hardship, the Governor acted under Section 110(g) to authorize the burning of up to 180,000 acres as provided for in the proposed SIP revision.

For now, the City of Eugene has decided not to take further legal steps, either to contest the Governor's action or to further pursue enforcement of the present SIP. However, it has also indicated that a condition for the relaxation of such legal activity will be the implementation of additional field burning rules designed to provide greater protection to the City of Eugene. A summary of rules proposed by the City and prepared by City staff is attached (Attachment II).

The Governor's executive order, EO-79-14, directs the Department to:

> "...implement smoke management controls using the most advanced techniques, including those proven successful during the 1978 burning season, and employing the best burning practices. The Department shall not authorize in excess of 180,000 acres for open field burning."

Region X of the Environmental Protection Agency has been continuing to examine the Department's SIP submittal with respect to both proposed field burning regulations and the technical support documentation regarding potential field burning impacts. The EPA has indicated that the field burning portion of Oregon's SIP could be proposed for approval provided problems with certain procedural, technical, and regulatory issues are satisfactorily resolved.

This staff report addresses regulatory changes proposed both by the City of Eugene and the Environmental Protection Agency.

Evaluation

The Environmental Protection Agency, after review of the Department's submission, has identified four substantive problems affecting the rules proposed for adoption. These are summarized and addressed as follows:

1. The EPA believes submitted regulations provide exemptions to certain regulatory requirements for days classified as having "unlimited ventilation," and that the proposed wording appears to preclude a classification of unlimited ventilation thus making the exemptions inoperative. The EPA states that either the exemptions should be removed or the ability to classify a day as unlimited ventilation should be established. The EPA further stated that if classification of unlimited ventilation is established and the exemptions to requirements for burning techniques, moisture content and acreage restrictions become operative parts of the regulation, the constant emission control requirements of the Clean Air Act may not be satisfied.

All days during the summer burning season must be classified as marginal or prohibited. Criteria for such classification are established by rule. If sufficient mixing depth and wind speed exist, unlimited ventilation conditions are said to exist. However, days are not specifically classified as unlimited ventilation days. Since burning is only allowed on marginal days, "Unlimited ventilation days" are a subset of days classified as marginal.

Rules adopted for the 1978 burning season provided for restrictions on straw moisture content and required strip-lighting of annual and cereal crops which could be waived by the Department when "unlimited ventilation" conditions were found to exist. In addition, if the 150,000 acres limitation is effected as a result smoke intrusions into Eugene/Springfield, burning could be authorized beyond the 150,000 acres only during periods of unlimited ventilation. The ability to waive moisture content and strip-lighting requirements based specifically on unlimited ventilation conditions was deleted as part of the revisions made since the 1978 season--thus unlimited ventilation conditions now only play a role after the establishment of the 150,000 acre limitation. Continuous emission controls are therefor maintained since in no instance is burning beyond the 180,000 acre limit.

2. The EPA indicates that the proposed regulations only limit the amount of acreage that can be burned experimentally for the 1979 season. Therefore, after 1979, there would be no limit on the amount of experimental burning allowed thus making the SIP revision unapprovable since it could not show continuing maintenance of the standards.

The present rules was drafted in an effort to achieve SIP approval prior to the 1979 season and with the intention of submitting another SIP revision prior to the 1980 season in response to new legislation.

Experimental burning is highly regulated under current rules and would not be expected to exceed current levels under projected research efforts. Since present wording is specific to 1979 it is suggested the EQC direct the Department not to exceed the present level without receiving specific authorization from the Commission and approval from the EPA.

3. The EPA believes the proposed regulation would allow the EQC to establish new annual acreage limitations every other year and that by including this provision in the SIP, the Administrator could be preempted in his responsibility to approve any revision to a SIP as required by the Clean Air Act.

The Department believes current rule language, 26-013 (1)(a), specifically limits burning to no more than 180,000 acres annually. Acreage changes made by the Commission pursuant to 26-013 (1)(c) would be restricted by the aforementioned limitation. Upward changes in acreage would require revision to sub-section (1)(a) which would in turn be subject to EPA Administrator review and approval.

4. The EPA is concerned that the use of relative humidity as an indicator of fuel moisture content, if implemented in the manner suggested in the proposed rules, it is unlikely to be effective in reducing actual emissions. It suggests that, rather than classifying days as prohibition conditions based on relative humidity, the burning of individual fields or areas be restricted based on relative humidity in a manner similar to the rainfall restriction.

All aspects of the smoke management program are implemented on an area-by-area basis when necessary. Though variations in relative humidty are much less extreme than is the case with rainfall patterns, restrictions on burning due to

humidity would be based upon data from the nearest measuring point such as an airport or local fire protection facilities. Thus the implementation of relative humidity controls would be (and is) essentially identical to the system proposed by the EPA.

Rule revisions proposed by the City of Eugene are basically those supported by the City during hearings in November and December, 1978. These may be summarized and addressed as follows:

1. Relative Humidity (Moisture Content) Restrictions

Prior to straw degradation straw moisture content has been found to be fairly well correlated with existing local relative humidity (RH). This fact was used in establishing the current rule which makes use of relative humidity to regulate field fuel moisture.

At its May, 1978, meeting the Commission adopted a loose straw moisture content level of 12 percent, based largely on data from California, as an upper limit for burning. Data was limited with regard to an appropriate level for loose straw moisture content particularly for the Willamette Valley. The City supported the 12 percent value.

The DEQ developed correlations for moisture content vs. RH for three commonly grown species and identified that an RH of approximately 65 percent restricted straw moistures to about 12 percent. After starw begins to deteriorate, the relationship between straw moisture and RH begins to break down. An RH value of 65 percent was incorporated in the rules because of its correlation with 12 percent moisture content and because a search of historical data showed it would restrict but not significantly eliminate burning.

The City of Eugene has proposed two levels of humidity controls for north and south wind days. The City staff believes that a 50 percent limitation on north wind days and 60 percent on south wind days would represent reasonably available, continuous emission controls and "would reduce the impact of an average smoke intrusion by four micrograms per cubic meter." (The City staff believes field burning smoke intrusions contribute, on the average, about 10-13 ug/m^3 to the 24-hour particulate levels in Eugene.) City representatives further indicate that because present quota releases are not filled, acreage amounts restricted by the proposed 50/60 limit could be burned on other days.

The Department believes the 50/60 limit would probably result in a net reduction in field burning emissions. Lower humidities should result in lower mass emissions, other factors being equal. However, such lower RH limits will also tend to reduce burning opportunity and, more importantly, limit options available to smoke managers. Though total emissions are important, in a smoke management context, they are much less significant than the effects of wind direction and speed and the proper timing and location of burning activity. When all such factors are considered, it does not necessarily follow that shifting acreage to drier days will reduce impact. Indeed, if smoke management decisions are already selecting days in order to minimize impact, shifting acreage to drier days to meet humidity

restrictions would result in more acreage being burned on days of anticipated higher impact. In order to maximize its ability to select and use conditions which offer the potential for burning with minimum smoke effects, staff believe RH limits should not be made more restrictive than the present 65 percent.

2. Ignition Techniques

Strip-lighting is a modified form of backfiring in which a very long flame front is developed and allowed to move into the wind. Due to its similarity to backfiring, strip-lights are said to have reduced emissions as compared to burning which moves with the wind. (Studies conducted by the Department in 1978 verified the lesser mass emissions of backfires as compared to headfire though strip-lights were not tested due to insufficient time.) Questions remain about the applicability of strip-lights due to somewhat reduced plume rise when compared to a rapid headfire or perimeter burn, unknown emissions when strips are placed sufficiently close together that headfires are simulated, the possibility of crop burnout on perennials due to longer flame residence time, the unquantified reduction of after-smoulder associated with strip-lights, and the increased fire hazard particularly when rapid ignitions are attempted using the method.

Another form of field ignition, perimeter lighting, was extensively tested by Oregon State University under contract to the DEQ last summer. Perimeter lighting, as conducted by OSU, was developed as the most practical form of rapidly lighting a field and thereby maximizing plume rise. It involves the lighting of all sides of the field simultaneously. Plume rise was maximized using this technique and ground level smoke minimized. Overall exposures to smoke downwind of the fire (up to 20 km) were shown to be lowest for perimeter burns when compared to strip-lights, headfires, and backfires. An emission factor, calculated from plume measurements, showed rapid perimeter burns to produce lower emissions than other techniques tested. This apparent conflict with the DEQ field test data may never be resolved due to differing techniques and sampling methods, however, the DEQ method is closest to the technique traditionally used by source testers.

The Department has proposed a rule revision, now scheduled for hearing August 31, 1979, which would require the use of strip-lighting or a generalized form of perimeter lighting for initiating open field burns on all grass seed crops. The rule is currently in effect on a temporary basis having been adopted by the Commission at its June 29, 1979, meeting. This temporary rule was proposed to restrict ignition of fields to one of two reasonably available methods designed to reduce smoke impacts. The combination of strip-lighting and perimeter lighting, as defined, is believed to represent continuous emission controls which can be reasonably implemented.

The City of Eugene supports expanded use of strip-lighting particularly on annuals where no burnout risk exists. This is based upon the reported lower emissions of strip-lights. The City staff also believes that the use of perimeter burning, as defined, does not represent continuous emission controls. Though it may be useful in reducing smoke impacts.

When field conditions are appropriate for rapid ignition, that is, dry straw relatively free of compaction with a minimum of green regrowth, the Department supports use of rapid burning procedures such that plume rise and dispersion are maximized. As poorer fuel conditions develop and good plume rise is not expected the Department believes strip-lighting may be used effectively to minimize smoke effects. Criteria for timely implementation of strip-lighting are not clear and need to be developed. Staff would propose to work with interested parties to establish such criteria for implementation this year on an experimental basis. Under current field burning rules the Department may require use of strip-lighting in order to minimize smoke impacts. Such authority could be used to implement strip-lighting once the aforementioned criteria have been developed.

3. South Priority Burning

During the 1978 season south priority burning was allowed upwind of the City of Eugene but was restricted to certain special south priority areas. North wind burning was allowed in these areas because of their direct impact on sensitive areas when burning under other wind conditions. It was found, as a result of the 1978 experience, that only limited amounts of burning could be accomplished in these areas because of the "nephelometer rule" which now effectively establishes an upper limit for smoke intrusions in the Eugene/Springfield area. Because of the protection afforded the City by the nephelometer rule, the Department eliminated the special south priority areas as part of the December, 1978, rule revision process, and instead provided in rules the opportunity to burn upwind of the City of Eugene only if the smoke would be effectively passed over the City at an altitude of 3,000 feet or greater. While the City of Eugene is still protected by the nephelometer rule, the rule change was proposed to allow some burning under two possible modes; 1) when rapid ignition techniques could put essentially all smoke from field burning at an altitude of 3,000 feet or greater, or 2) when wind flow fields are such that only winds above 3,000 feet would carry smoke toward the City of Eugene and low-level smoke would carry smoke away from the City of Eugene.

Experience in 1979 has been similar to 1978 in that opportunities for burning under these situations are very limited. The Department does not expect significant acreages to be burned under this provision of the priority burning rule; if this rule, or a rule similar to that used in 1978, is not in effect, burning of south priority acreages will be essentially precluded. While the City of Eugene has interpreted this rule to be equivalent to aiming smoke at the City, we believe by its implementation the Department is taking every opportunity to aim smoke away from the City while allowing on rare occasions smoke to pass over the top of the City. Because of the nephelometer rule, at no time are surface level impacts to be authorized as a result of south priority burning. We believe the 3,000 foot minimum altitude allows an adequate margin of safety for Eugene and Springfield.

4. Performance Standard

The City of Eugene has proposed a performance standard whereby release criteria for field burning would be progressive restrictions based upon an accumulation

of hours of smoke intrusion into the City of Eugene. This is, in effect, an expanded version of the present nephelometer rule. However, as proposed by the City staff, rather than restrictions on the total amount of acreage which could be burned the periods of time for burning would be gradually restricted due to increases in the minimum allowable mixing height for burning. As smoke intrusion hours increase the minimum required mixing height under which burning could be conducted would also increase, thus restricting burning to only days of good ventilation. Though not proposed for a rule revision at this time the City has offered the technique for a mock implementation during the 1979 burning season in order to fully test its applicability.

The Department is interested in the establishment of a performance standard whereby certain meteorological criteria and the role they play in smoke management operation could be emphasized over a complete dependence upon annual acreage limitations. It is believed that this approach is technically more sound than reliance upon acreage limitations alone. Because of the large amount of data summarized in the City of Eugene's proposed performance standard, the Department staff has not had adequate time to review it. However, the Department would support its mock implementation this year to determine it's applicability or if other technical criteria might be used more successfully in limiting smoke intrusions. Since the City's proposed performance standard has been drafted to address not only smoke intrusions but Federal regulations regarding significant sources it would appear that both Federal and state regulations might be suitably addressed under such a standard.

The City of Eugene seeks to have such a performance standard approved and incorporated as part of the State Implementation Plan for submittal prior to the 1980 burning season. Because of the significant amount of technical input and review that such a performance standard would require, staff believes it would be inappropriate to make a commitment to adoption of such a standard at this time. However, upon suitable review, after the 1979 burning season, the staff will be prepared to propose a performance standard if it is deemed appropriate and applicable under the needs of the smoke management system, state law, and the Clean Air Act.

Summation

The Environmental Protection Agency (EPA) Region X is reviewing the Department's proposed revision to the Oregon Clean Air Act State Implementation Plan (SIP) regarding field burning. As a result of this review process, the EPA requested clarification and/or revision to certain regulations adopted by the Department. While the EPA review continued for anticipated approval in December, 1979, Governor Atiyeh issued an executive order indicating his suspension under section 110 (g) of the Clean Air Act of the existing field burning SIP in favor of the proposed revision. This suspension allows for the burning of 180,000 acres as compared to the 50,000 acres authorized in the existing SIP. At this time the City of Eugene has indicated it will not act to oppose the Governor's action. However, in light of the potential for burning 180,000 acres as a result of the Governor's action the City of Eugene has asked for revision to certain field burning regulations. The revisions requested by the EPA and the City and proposed Department responses are summarized as follows:

1. The EPA believes the proposed regulation provides for exemptions to

certain regulatory requirements for days classified as having unlimited ventilation, but believes rule language precludes a classification of unlimited ventilation. The exemptions thus would become inoperative. The EPA suggests that either the exemptions be removed or a new classification of unlimited ventilation be established. In addition, the EPA expresses concern that the exemptions to requirements for burning techniques, moisture content, and acreage restrictions do not meet the requirements for constant emission control established in the Clean Air Act.

Days are not classified as unlimited ventilation days, however, unlimited ventilation conditions may exist on either marginal or prohibition days. Because burning is conducted on marginal days only an "unlimited ventilation day" is a sub-group of days classified as marginal days.

The only exemption now in effect and regulated by the identification of unlimited ventilation conditions are acreage restrictions which have been implemented as a result of accumulated smoke intrusions in the Eugene/Springfield area. Since the upper limit for acreage to be burned in a given year is established in the rules at 180,000 acres and since unlimited ventilation conditions only allow for burning in excess of 150,000 but less than the 180,000 acre limitation, the requirement for constant emission controls of the Clean Air Act is not effected by the establishment of unlimited ventilation days.

2. The EPA believes the proposed regulations only limits the amount of acreage that can be burned experimentally for the season.

The current regulations were proposed to allow the Environmental Quality Commission the opportunity to review the experimental burning program each year and to establish an acreage in accordance with that program. When orginally drafted, this rule was designed to apply to the 1979 season, assuming adoption prior to that season. It was also anticipated at that time that an additional rule revision and SIP submittal would be made prior to the 1980 season. The experimental burning program is highly regulated under the current rules and acreage is generally limited and not expected to exceed the 7,500 acre level in future seasons. However, the language does not identify experimental burning acreages during 1980 and beyond. The Commission may wish to remove the date or direct the Department to allow no more than the current amount without specific authorization in future experimental burning programs.

3. The EPA is concerned that the current rules allow the Environmental Quality Commission to establish new annual acreage limitations every other year, thus possibly preempting the Administrator in his responsibility to approve any revision to the SIP.

The Department believes the present regulations specifically limit burning to no more than 180,000 acreas annually and that the Commission would be limited to that amount of acreage in future decisions regarding acreage limitation without approval from the EPA Administrator.

4. The EPA believes that incorporation of the relative humidity to control fuel moisture content as a limitation on the classification on prohibition days, prohibition conditions is inappropriate and that the burning of fields or areas should be regulated by a local relative humidity in a manner similar to the current rainfall rule.

All current smoke management parameters are applied on an area by area basis in order to provide an equitable opportunity to burn and to take advantage of good burning opportunities when present. This is the situation also with the identification of prohibition conditions in the Willamette Valley. Thus, the use of relative humidity as a control feature for moisture content in straw will be applied in a manner analogous to the current rainfall restriction rule. Relative humidity readings on which prohibition conditions are established will be based upon the nearest available measurements.

5. The City of Eugene would propose that the relative humidity restrictions used to control the straw moisture content be revised such that no burning would occur with relative humidities greater than 50 percent under north wind conditions and under 60 percent under south wind conditions.

The Department would propose to retain the current 65 percent relative humidity restriction since it is correlated with the straw moisture content of 12 percent previously adopted by the Commission. Increasing restrictions to lower values than 65 percent will result in somewhat reduced particulate emissions. However, it is also anticipated that further restrictions on relative humidity will result in a reduced opportunity to burn and remove flexibility in selecting burning conditions now available to the smoke managers. Since certain other meteorological factors, such as wind direction and speed, and the timing of burning are more critical in terms of preventing smoke impacts, relative humidity and moisture content restrictions should not become a significant overriding feature of burning control. The smoke management program now, as currently run, attempts to select the best days for minimum smoke intrusion. The shifting of acreages away from days selected under the current process to other days, as would be required by additional relative humidity restrictions, would be a move toward greater smoke impacts.

6. The City of Eugene supports the increased use, particularly on annual ryegrass, of strip-lighting as a method to reduce field burning emissions. It also supports the use of perimeter lighting involving the simultaneous ignition of all sides of the field but believes the technique may not meet the requirements of continuous emission controls as specified in the Clean Air Act.

The Department believes the use of strip-lighting may be appropriate under certain high moisture content fuel conditions and believes the criteria need be established for use of strip-lighting under those conditions. When field conditions are good the Department supports the use of perimeter type burning and that true perimeter lighting, with simultaneous ignition of all sides of the field, should be implemented as soon as it is practicable. Experimental use of criteria for strip-lighting could be implemented this season under the current rules.

7. The City of Eugene believes the current south priority rule represents too much of a risk to the citizens of Eugene and Springfield and increases the possibility of an unintentional smoke intrusion occuring. The City believes the rules should be deleted thereby preventing the burning of any South Valley priority areas upwind of the City of Eugene.

The proposed rule was drafted to allow burning upwind of the City of Eugene but not to allow low-level smoke to pass through the City. The current restrictions on smoke intrusions in the City of Eugene provide protection from surface level smoke impact. Burning in the South Valley priority areas without such a rule would be essentially precluded. Burning in the South priority areas under the current rule can only be accomplished under one of the following conditions:

1) Rapid ignition methods are used such that essentially all of the smoke produced is transported to elevations above 3,000 feet, or

2) Surface level winds transport low level smoke away from the City of Eugene while upper level winds transport smoke over the City.

8. The City of Eugene has proposed a performance standard for adoption and inclusion in the State Implementation Plan after its experimental application during the 1979 season. Based on cumulative hours of smoke intrusion in the Eugene/Springfield area, the proposed performance standard would place increasing restrictions on the allowable mixing height under which burning could be conducted. Assuming significant smoke intrusions into the Eugene/Springfield area, late season field burning could be precluded under such a plan.

The Department is interested in the development of a performance standard in that it would tend to minimize discussions regarding the annual acreage limitation and establish better technical basis for the prevention of smoke intrusions into the Eugene/Springfield area. In addition, it maintains an incentive for all interested parties in the continued success of a smoke management program. Because of the complexities involved in development of a performance standard the Department is willing to conduct, experimentally, application of the proposed standard but is not willing to support its adoption at this time without further technical review. In addition, the Department believes no commitment should be made to its adoption or inclusion in a State Implementation Plan until fully reviewed on a technical basis.

Director's Recommendation

Based upon the Summation, it is recommended that the Environmental Quality Commission take the following action:

1) Acknowledge Executive Order 79-14 and direct the staff to comply with that part of the Oregon State Implementation Plan Revision applying to field burning as submitted to date ~~or~~ AND as ~~may be~~ further modified as a result of this August 6, 1979, meeting

2. Direct the staff to respond to the EPA to correct items 1 through 4 in the Summary, ~~through rule revision or other procedure as may be identified after this special meeting~~.

3. Direct the staff to meet with interested parties with regard to the establishment of criteria for strip-lighting to be used experimentally during this season.

4. Instruct the Department to ~~implement, on an experimental basis,~~ evaluate the performance standard proposed by the City of Eugene for the 1979 field burning season, and to assess such performance standard or other performance standards as may be developed. Further instruct the Department to ~~implement~~ develop such a performance standard if found acceptable in light of state and Federal law and the needs of the smoke management program.

WILLIAM H. YOUNG

Attachments: I Executive Order 79-14
II Memorandum to the EQC from Terry Smith, August 6, 1979

SAF:pas
686-7837
8/6/79

ATTACHMENT I

VICTOR ATIYEH
GOVERNOR

OFFICE OF THE GOVERNOR
STATE CAPITOL
SALEM 97310

July 31, 1979

Mr. William H. Young, Director
DEPARTMENT OF ENVIRONMENTAL QUALITY
522 S. W. 5th
Portland, OR 97204

Dear Bill:

Today I am issuing Executive Order 79-14 authorizing your department to allow burning not to exceed 180,000 acres.

This Executive Order is being issued with the knowledge and approval of the City of Eugene and the Oregon grass seed growers. I have for the past several days been in communication with representatives of both. It is apparent to me that both the city and the industry felt that mandating 50,000 acres would not serve the public interest. However, there was a breakdown in communication. At this point I concluded it was appropriate for me to act as an intermediary in order to establish communication between the city and grass seed industry. The city has expressed to me their concerns about air quality. I also have my own concerns about the protection of air quality. These concerns have been incorporated into the Executive Order. The grass seed industry has given me their assurances to cooperate with the department in every way possible to insure the best burning procedures. I believe the result will be beneficial to all parties involved.

I also want you to know and communicate to the commission that I have advised both the city and the industry that if the EPA adopts its' proposed rule approving the 180,000 acre limit, I have no intention of issuing another emergency order. The determination of allowable amount of field burning should in the future be determined through normal procedures under state and federal law. The reason I feel that an order is appropriate this year is because it is apparent that the only reason EPA has not approved the 180,000 acres limit is because of procedural steps required by federal law. I have also made a commitment to exert my influence to the greatest degree possible to encourage research of alternative methods to field burning.

It is my hope that some day the matter of acreage limits will be put to rest, and if field burning is needed it will be done under your departments regulation, treated like any other air pollution source in Oregon.

I will watch with great interest the detailed results reached by your department and the EQC. It is my desire that the resolution will be done on a good faith basis involving all the interested parties.

Sincerely,

Victor Atiyeh,
Governor

VA/gh

State of Oregon

OFFICE OF THE GOVERNOR

EXECUTIVE ORDER NO. EO - 79 - 14

ANNUAL OPEN FIELD BURNING IN 1979

Under Oregon law and rules, open field burning is limited to 180,000 acres to be burned annually. Under the Federal Clean Air Act, the Oregon State Implementation Plan provides a 50,000 acre limit on open field burning. The Oregon Environmental Quality Commission (EQC) has submitted revisions of the Oregon State Implementation Plan to the Federal Environmental Protection Agency (EPA) to conform the plan to the 180,000 acre open field burning limit provided by state law and rules.

Open field burning to date has been proven to be the only feasible method for preparing fields for grass seed growing, although intensive research has been conducted and continues in search of an alternative. The growing of grass seed is a major Oregon industry, producing an estimated annual income of $70 million. It is estimated that to curtail the industry to 50,000 acres this year would bring about a gross yield loss in 1980 in excess of $23 million.

On the other hand, unregulated open field burning in the past has had a detrimental impact on air quality in the Willamette Valley which has been particularly detrimental to the citizens of the city of Eugene. However, it has been demonstrated in recent years that through an intensive smoke management program field burning can be effectively controlled to preserve air quality. In 1978 open field burning was permitted under smoke management controls administered by the Department of Environmental Quality pursuant to an Interim Control Strategy approved by EPA to a limit of 180,000 acres. As a result of this strategy, there were no "alert" days because of field burning and only 7-1/2 hours of smoke "intrusion." Air quality standards were maintained in 1978 without major incident or protest. The Environmental Protection Agency has issued a notice of proposed rule making stating that it is "proposing to approve the Oregon submittal," including the 180,000 acre open field burning limit.

Oregon's submission of a revision to the Oregon State Implementation Plan has not yet been finally approved or disapproved by the Administrator of EPA, and cannot be approved or disapproved within the four-month period which the Administrator has under the Clean Air Act to approve or disapprove such a proposed revision. According to a July 23, 1979, press release of Region X of EPA, the process of obtaining final EPA action on the 180,000 acre request cannot be completed until after the conclusion of the 1979 field burning season.

MORE

Failure to employ open field burning techniques will result in greater consumption of fuel in preparing fields for seeding and in reduced yields for the following season, thereby lessening employment associated with field preparation, harvesting, processing, transporting and sales of the grass seed industry.

ORS 468.475, as amended by section 11, chapter 559, Oregon Laws 1975, which is part of the present Oregon State Implementation Plan, provides in subsection (5) thereof, that the Governor, upon finding of extreme hardship, may by order permit emergency open burning of more acreage than allowed by subsection (2) thereof (namely 50,000 acres);

The Federal Clean Air Act, section 110(g), provides that the Governor may issue a temporary emergency suspension of the part of the applicable implementation plan for the State which is prepared to be revised with respect to such source, in specified circumstances, such as these;

It is necessary to prevent:

(i) the closing for one year or more of the field burning sources of air pollution (which sources would not otherwise be closed);

(ii) substantial increases in unemployment which result from such closing; and

(iii) extreme hardship;

IT IS HEREBY ORDERED THAT:

The provisions governing open field burning, including the 50,000 acre burning limit, in the present Oregon State Implementation Plan be suspended on a temporary emergency basis, pursuant to section 110(g) of the Federal Clean Air Act and under the authority of Oregon law. The Department of Environmental Quality is directed to implement smoke management controls using the most advanced techniques, including those proven successful during the 1978 burning season, and employing the best burning practices. The Department shall not authorize in excess of 180,000 acres for open field burning. The Department shall submit to me weekly reports with sufficient data so the Governor can determine whether this order should be continued.

++++ MORE/OVER++++

This order shall terminate upon the order of the Governor, and in any event by the 120th day following the date hereof.

Executed at Salem, Oregon, this 31st day of July, 1979.

GOVERNOR

ATTEST:

SECRETARY OF STATE

M E M O R A N D U M

August 6, 1979

TO: Environmental Quality Commission

FROM: Terry Smith, Environmental Analyst

SUBJECT: FIELD-BURNING PERFORMANCE STANDARD AND RULE CHANGES

SUMMARY

Performance Standard

A field-burning performance regulation has been developed which tightens smoke-management requirements if significant smoke intrusions occur. EPA has determined that 10 micrograms per cubic meter (UGM/M^3) is a significant contribution to 24-hour total suspended particulate (TSP) concentrations. The proposed regulation would allow 10 hours of smoke intrusions (two average intrusions of 10 UGM/M^3) to occur before imposing measures to reduce the probability of additional intrusions occurring. The chance of additional smoke intrusions occurring would be reduced by increasing the mixing height requirements for days to be classified as marginal burn days. If still more intrusions occur, additional increases in mixing height requirements would be imposed to limit burning to only the best days available.

From an analysis of smoke intrusions into Eugene and Springfield, the average smoke intrusion was found to last five to six hours and contribute 10 to 13 UGM/M^3 to 24-hour TSP concentrations. More than two such intrusions begins to pose problems for the achievement of the 24-hour TSP standard. The initial imposition of tighter restrictions was therefore set at 10 hours, with additional restrictions imposed for every five hours of intrusions that occur thereafter. The following shows the restrictions on imposed mixing heights for various amounts of smoke intrusions.

Cumulative Hours/ Smoke Intrusions	Required Mixing For Burning	
	North Wind Days	South Wind Days
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From an analysis of previous years, it was found that intrusions that exceeded hourly average $B\text{-}Scat$ value of 5.6 contribute more than 20 UGM/M^3. For this reason, hours over 5.6 will be counted double. The standard should be imposed in all smoke-sensitive areas, including Lebanon.

From an evaluation of mixing heights on burning days, the proposed restrictions were found to allow burning and continue even late in the season, until the 25-hour level is reached. A correlation analysis of the relation between annual amount of burning and the amount of smoke intrusions shows that during an average year, at least 187,000 acres could be burned without the accumulation of enough hours of smoke intrusions to impose any of the restrictions. During the worst expected year, the first level of restriction would be reached after 153,000 acres were burned. In a good year, 222,000 acres could be burned without restrictions being imposed. In all cases, additional acreage could be burned under the more strict requirements. If the 25-hour limit (five average intrusions) were reached, burning would be all but prohibited, especially after mid-September. As smoke management and burning practices improve, more burning could be accomplished within these regulations.

However, if smoke management proved less successful in the long run or if attempts to burn excessive acreage resulted in a total of 25 hours or more of smoke intrusions, then the mixing height restrictions for the following year would start at the first step in the regulations.

Although examination of previous years shows this to be a workable proposal, a mock implementation of the proposal this season should satisfy all parties of its reasonableness. A hearing is proposed for showing that the regulation would not result in violations of standards for prevention of signifcant deterioration and prevent attainment as well as the other criteria in CAA ¶110 or prevent the burning of more than 150,000 acres. If these showings are not made, the regulation would be put into effect.

Moisture Restrictions

The EQC chose to relax the moisture restrictions used in 1978, based on their staff's recommendation. Since that time, we have re-examined the effectiveness of moisture restrictions and are more convinced than ever of their soundness. Last year's rules incorporated a 12-percent straw moisture limitation and a 50-percent relative humidity limitation on north wind days. These values were based on California fall rice field burning practices. It is now clear that summertime drying conditions in the Willamette Valley are better than fall conditions in the Sacramento Valley, so that 50-percent relative humidity corresponds to a seasonal average grass straw moisture of 9.6 percent. Therefore, 50-percent relative humidity is a more strict requirement. In relaxing the relative humidity restriction, no showing was made that the 50-percent restriction used last year severely reduced burning; nor was any showing made about what level of control a 65-percent restriction imposed.

There is now conclusive evidence from emissions tests that the influence of relative humidity on fuel moisture is a significant factor determining emissions from field burning. Higher relative humidity leads to higher fuel moisture and

increased emissions, even during the burning periods after heavy rains. A statistical investigation of smoke intrusions over a five-year period shows that more intense intrusions occur when relative humidity is higher. Finally, an examination of climatological data on burn days shows that a relative humidity restriction of 50 percent for north wind days and 60 percent for south wind days is practical, and would achieve a moderate amount of emissions reductions without severely limiting burning. This limitation would force 15,800 acres to be burned on drier days during the season, would reduce emissions by 3,400 tons of particulate, and would reduce the impact of an average smoke intrusion by about 4 UGM/M^3. Shifting this amount of burning to better days appears feasible, since current quota releases are not being fully used.

We believe, then, that the 50-60 percent relative humidity restriction is a reasonably available, continuous emissions control measure for the Willamette Valley. Relative humidity restrictions are easily enforced and administered. These restrictions will reduce emissions and the impact of any smoke intrusions which occur.

Ignition Techniques

In a recent emergency hearing, the rules on ignition techniques to be applied to annual ryegrass were changed. There is evidence that into-the-wind strip lighting reduces both emissions due to its similarities to backfiring, and ground-level smoke impact due to rapid heat release and good plume rise. The technique has not been required on perennials, due to uncertainties about burnout.

The perimeter ignition technique tested last year was adopted as a substitute for strip lighting and the rule now applies to all grass types. This technique requires the simultaneous ignition of all sides of a field, and it appears to resemble headfires on all sides of the field. As a result, this method is able to capture low-energy smoke that normally remains at ground level and carries it to high elevations, thereby reducing ground-level smoke impact. It seems safe to assume that the emissions from this ignition technique would equal or exceed a regular headfire, and that burnout on perennials would not be a problem.

Perimeter lighting does not satisfy the requirements of continuous emissions controls, since it could increase emissions. The temporary rule is vague and does not clearly differentiate current headfire practices from what is defined as perimeter lighting.

To meet the requirements of the Clean Air Act, reduce the possibility of smoke impact, and gain full-scale experience with both emission techniques, some rule changes must be made. Strip lighting should remain the preferred method on annuals and should be the only method used on annuals late in the season when regrowth and rain have reduced plume rise. Perimeter lighting should be defined

clearly--simultaneous ignition of all sides of the field--and be an optional method on perennials for this season. If successful, perimeter lighting would become a preferred method for perennials next year.

South Priority Burning

The present south priority rule is a change from last season. Last year's rules banned south priority burning upwind of Eugene. To allow south priority growers close to the Eugene-Springfield AQMA some limited opportunity to burn, backfire burning upwind of highways was allowed while maintaining a minimum visibility of one-half mile. The Harrisburg traffic accident showed that even a remote problem with this practice (the occurrence of a "wild" fire) led to unacceptable consequences. With the elimination of this opportunity to burn, one of the few remaining alternatives left was implemented in this year's rules. Limited burning upwind of Eugene would be allowed if the smoke could be kept above 3,000 feet over the AQMA.

As we have stated previously, we oppose this rule. Aiming the smoke to go over Eugene and Springfield amounts to trying to shoot the apple off a person's head. This obviously increases the possibility of an unintentional smoke intrusion occurring. The pre-1978 rules governing south priority areas used a similar concept; upwind burning would be allowed when it was thought that visibility would not be reduced below 12 miles. Neither this concept nor the upwind-backfiring procedure worked. The adopted rule has not been tested and we have seen no reason to believe that it will work either. This rule should be deleted.

Enforcement

There is the belief, widely held by all parties, that substantial amounts of illegal burning have occurred since 1976. If a current project to use satellite photographs to determine the amount of acreage burned is successful and finds this to be true, additional enforcement regulations and staff should be put in place. One potential side benefit of the performance regulation and the possibility of increased burning this might allow is a reduction of the pressures that lead to illegal burning.

Research

The Governor has asked that aggressive research be conducted. The health effects of smoke is presently the most neglected area of research. The Department's chemical mass balance analysis in both Portland and the Valley shows that vegetative burning smoke is a close second to soil dust as the largest contributor to TSP concentrations and that it is by far the largest contributor to fine suspended particulate concentrations. The same is probably true to other areas of the Pacific Northwest. Field burning is only one type of vegetative burning.

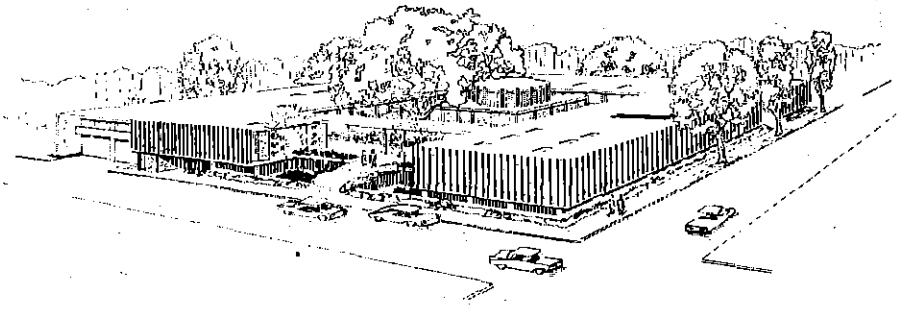
Every field burning bill has called for health effects to be studied. No studies have been conducted. Since EPA is mainly concerned with eastern urban area-type pollution, they are not going to conduct studies either. We have talked with both Region 10 and Research Triangle Park, and neither group has funding available for health effects research on this problem.

Potentially, smoke could be a far more serious threat to human health in the Northwest than EPA's relaxation of the ozone standard, which has been a major concern of the Commission. We urge that the Commission direct the Department to--on a high-priority basis--develop a proposal for a prospective epidemological study to begin in 1980. A number of sources of funding are possible, including appropriations from the Legislative Emergency Board and from other states and agencies in the region.

The Department should also be directed to develop legislative proposals to encourage straw use. A few markets have been identified that are nearly economically feasible for the entry of straw. The removal of institutional barriers and the development of short-term incentives could speed up the entry of straw into these markets. One example of such a proposal is removal of the weight-mile tax on trucks hauling straw for a five-year period.

TS:er/PW21b9

CITY OF EUGENE



CIVIL DEPARTMENT — 101 EAST BROADWAY, SUITE 401 — 503/687-5080
EUGENE, OREGON 97401

August 6, 1979

MEMORANDUM

TO: Chairman Richards and Members of the Environmental Quality Commission

FROM: City of Eugene

RE: Field Burning Rules

The City of Eugene brings certain proposals before you today which, in our view, represent an equitable long-term solution to the field burning issue. We are asking the Commission to do four things:

1. Adopt certain proposed operational rule revisions designed to fully implement Executive Order No. 79-14 of the Governor;

2. Agree to include such rules in the State Implementation Plan and direct the staff to expand the public notice for rule-making given for the August 31 EQC meeting to allow a hearing on such rules;

3. Commit the Commission to inclusion of Eugene's proposed performance standard in the SIP if it satisfies certain criteria based upon a modeling of the standard during the 1979 summer burning season; and

4. Direct the Department to investigate all sources of funding and forms of an epidemiological study on the effects of vegetative burning on the health of Willamette Valley residents and to report its conclusions to the Commission by September 30, 1979.

The decisions which you reach today will determine Eugene's short-term and long-range strategies with respect to field burning. To more fully understand our requests, you should be aware of our motivations in this matter.

A. Eugene's Motivations and Goals

The City's concerns with respect to nearby open agricultural burning have included the following:

1. Health effects. Field burning at a 180,000 acre level emits nearly 27,000 tons of particulates into the Valley's airshed. Much of these emissions are in respirable fine particulates which, if ingested, cause both acute and chronic health effects. Substantial amounts of polycyclic organic matter, a known carcinogen, are also emitted. An increasing number of patients in our area require physician visits, increased medication, hospitalization, or removal from the Valley during the burning season.

2. Economic costs. There is an economic boycott of goods and services from Eugene by the growers and their allies. Reduction in tourism and recreational pursuits within the Valley during the burning season probably occurs. But more important is our projection of future economic losses unless the magnitude and number of smoke intrusions from burning is severely curtailed.

Eugene-Springfield is presently a nonattainment area for particulates by reason of regulations under the Clean Air Act. This means that reductions in emissions from regulated sources must occur under a strict schedule or no new industry will be allowed in or around Eugene. An average field burning intrusion contributes 10 to 13 ug/m^3 to the 24 hour particulate standard. Severe intrusions contribute 60-90 ug/m^3. We must find a way to reduce the intensity of these intrusions as well as provide a cushion of reductions from all sources so that smoke intrusions will not cause standard violations. Unless these goals are accomplished, the economic results will be stark and severe.

These factors have produced the following goals:

1. Removal of the field burning controversy from the political realm. We wish to treat this issue as a technical and legal problem not a test of political muscle. The focus of controversy should be shifted from acreage numbers to the timing, manner, and effects of open burning. It should be clear that federal restrictions on the necessary content of air pollution strategies control over state legislation designed to enrich a favored industry.

2. Protection of the health of Eugene's residents.

3. Development of alternative burning methods and practices to reduce the amount of emissions from field burning (and thus reduce the severity of intrusions which do occur) and maximize incentives to the growers to limit the number of smoke intrusions into population centers.

4. Requiring proper process for any changes in the regulation of field burning. Such changes must be technically and legally justified with adequate provision for citizen input and unbiased decision-making.

5. Encouragement of alternative methods to open burning and alternate crops to grass seed.

We believe that these goals are reasonable and should be shared by the Commission.

B. The Present Status

These goals have only been partially attained. The changes that occurred at our urging for the 1978 season included: disallowance of burning upwind of the City of Eugene; requiring the use of alternative ignition techniques and moisture content restrictions which reduce the amount of particulate emissions; and mandating the use of an acreage release system which allows increased burning only if certain air quality criteria have been met.

We are disappointed by what we perceive as relaxation of these rules for the 1979 season. The present rules (which are also proposed as revisions to the SIP) loosen previously adopted moisture content restrictions, allow upwind burning from the City of Eugene and substantially eliminate the mandated use of strip-lighting (which decreases emissions) in favor of current and historical rapid ignition techniques. Moreover, SB 472, recently enacted, increases the maximum burn for 1980 and beyond, to 250,000 acreas.

Our legal research leads us to believe that Governor Atiyeh lacks the authority to suspend federal restrictions limiting burning to 50,000 acres this year. Nonetheless, the Governor has been quite receptive to our concerns and the terms his Order require better long-term regulations of open burning than presently exist. By foregoing legal challenge to the Governor's action, we sincerely believe that the time is ripe for Eugene to submit a plan for your approval which adequately protects the health of Eugeneans, encourages alternatives to open burning, increases incentives to the growers to prevent smoke intrusions, and allows that level of burning claimed by the seed industry as necessary to its economic survival.

We wish to stress, however, that we are seriously considering an alternative strategy - one that will limit the burning this year and in future years to 50,000 acres. We have concluded that this restriction could be accomplished by pursuit of certain legal remedies. Such a limitation would force market alternatives

to burning and grass seed cultivation and protect the health of our residents. We are prepared to forcefully pursue this option only if it appears that an equitable long-term solution is not imminent.

C. An Equitable Solution.

The Commission's task is to implement Executive Order No. 79-14. In his July 31, 1979, letter to DEQ Director Young, the Governor requested a resolution of the field burning issue "on a good faith basis involving all interested parties." He noted his "own concerns about the protection of air quality ... [which] have been incorporated into the Executive Order." Governor Atiyeh expressed his hope "that some deny the matter of acreage limits will be put to rest, and ... field burning ... will be ... treated like any other pollution source in Oregon."

The Governor's command to the EQC is "to implement smoke management controls using the most advance techniques, including those proven successful during the 1978 burning season, and employing the best burning practices." And in assurances to representatives of the City of Eguene, the Governor agreed that a multiple year solution would be forthcoming. In the face of these expressed directives and requests, Eugene suggests the following EQC action:

1. Employment of the best burning practices and most advance smoke management controls, including those proven successful during the 1978 burning season. We request adoption of the rule changes as specified in the attached order. Essentially these changes are:

a. Moisture content controls. This rule would disallow burning when the relative humidity is greater than 50% for north wind days and 60% for south wind days. Last year's rules set the level at 50%. A 50-60% rule would force only a small amount of acreage to be burned on drier days but would reduce emissions by 3,400 tons and reduce the impact of an average smoke intrusion by 4 ug/m^3 from the present 10 ug/m^3 impact.

b. Require use of feasible ignition techniques. Our rules last year required striplighting on all annuals except when unusual ventilation conditions existed. This year's rules allow historical ignition techniques on all crops. We propose that striplighting be used on all annual and perimeter lighting on the perennial crops. Adoption of this strip-lighting requirement is consistent with last year's rules and satisfies EPA's request for continuous emission controls for open burning since striplighting significantly reduces

emissions compared to other techniques. Use of perimeter lighting on the remainder is, in our view, a "most advanced technique."

c. Retain south priority acreage limitations. Last year's rules banned south priority burning upwind of Eugene. This year's rules allow such burning if the Department finds that the smoke can be kept at 3,000 feet. We are unwilling to take this risk. This area has historically contributed 45% of our field smoke intrusions.

2. A multiple year solution. These proposed rules are designed to allow a substantial amount of burning to be done in a manner which reasonably protects the air quality in Eugene. Because we wish to seek a long-term means of regulating field burning, we request that such changes be included in the State Implementation Plan. These methods satisfy EPA's request that this SIP revision "ensure the use of all reasonably available constant emission controls." We ask that the Commission issue notice of rule-making which includes these changes for consideration at the August 31 SIP revision meeting.

3. Putting the matter of acreage limits to rest. The cornerstone of our proposals is the field burning performance standard. The operation of this standard is analyzed in a technical document concurrently submitted to you. This standard very likely will allow increased burning above a 180,000 acre level and render irrelevant, acreage limitations. It can be used under the present statute or SB 472 when SB 472 becomes effective. It contains incentives for clean burns and minimizing intrusions. And it protects both Eugene and the East Valley communities from excessive or severe intrusions.

We recognize that it is impractical to implement this proposal for the current burning season. We are asking for a present commitment by the Commission to place the standard in the SIP by January 1, 1979, for future burning years. We have analyzed the effect that the standard would have on past seasons and have found that increased burning would have resulted unless severe smoke intrusions occurred. We request a present commitment by the Commission to adopt this measure as part of the SIP, which can be abandoned, if, on the basis of a modeled use of the standard this year, it is found at a subsequent hearing that:

1. Use of this standard would be contrary to the criteria set forth in Section 110 of the Clean Air Act (attainment of air quality standards); or,

2. By the use of this standard alone, less than 150,000 acres would have been burned this season. In other words, applied to the 1979 season, operation of the standard would

have allowed a minimum of 150,000 acres of burning. We are confident that even during the worst conditions burning at this level would be permitted. These criteria test the operation of the standard both from an environmental and grower perspective. They are the relevant criteria during any hearing to determine if the standard should be included as part of the SIP. Such a hearing could occur at the conclusion of the season in October or November.

We must emphasize that we need some honorable assurance at this time, that this proposal will be implemented. Our detailing of the standard allows as much burning as is environmentally and politically acceptable to our constituents. We cannot abandon present litigation options without such assurances.

3. Aggressive research. The last plank of our requests is stimulation of research into the effects of vegetative burning (of whatever source) on the health of exposed persons. There is a shocking lack of data on this subject. And it is a topic of only regional concern. We believe that funding, both public and private, exists for such a study. We ask that the Commission direct the Department to investigate this topic and quickly report its findings to you. We will cooperate in whatever way we can to assist the Department in locating funds and specifying the content of such a study.

These proposals are reasonable. They will, if adopted, significantly reduce the inordinate amount of energy invested in the field burning issue by the Commission, the EPA, the executive and judicial branches of state government and the affected parties. They represent a solution to the issue that is fair to all concerned. We urge your adoption.

Respectfully submitted,

JOHNSON, HARRANG & MERCER
City Attorneys

By: _____
Stanton F. Long

By: _____
Timothy J. Sercombe

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION OF THE STATE OF OREGON

IN THE MATTER OF THE IMPLEMENTATION OF EXECUTIVE ORDER NO. 79-14	ORDER

The Environmental Quality Commission being directed by the Governor to adopt rules for the 1979 summer field burning season which "implement smoke management controls using the most advanced techniques, including those proven successful during the 1978 burning season, and employing the best burning practices", as implementation of Executive Order No. 79-14, and the Commission having heard the views of interested parties and finding that failure to act promptly in adopting rules will result in continuance of a 50,000 acre limitation on burning with serious prejudice to the interest of the grass seed industry so that emergency rule adoption is necessary under ORS 183.355(5),

IT IS HEREBY ORDERED THAT:

1. OAR 26-015(1)(c) is amended to read:

> "Prohibition Conditions: Either (A) forecast northerly winds and a mixing depth of 3500 feet or less; or, (B) forecast northerly winds and relative humidity greater than 50 percent or forecast southerly winds and relative humidity greater than 60 percent."

2. OAR 26-015(4)(e)(A) is amended to read:

> "All annual grass seed crops and cereal crops shall be burned using into-the-wind strip burning; all perennial grass seed crops shall be burned using perimeter burning methods;" except when the mixing depth is 5000 Feet or greater.

3. OAR 26-015(4)(d)(B) is amended to read:

"No south priority acreage shall be burned upwind of the Eugene-Springfield nonattainment area."

4. The Department of Environmental Quality is directed to include the above rule changes in the agenda of the Commission meeting of August 31, for inclusion in the state implementation plan submittal, and to amend the public notice of that meeting accordingly.

5. The Department is further directed to investigate all sources of funding and forms of an epidemiological study on the effects of vegetative burning on the health of Willamette Valley residents and to report its conclusions to the Department by September 30, 1979.

DATED this __ day of August, 1979.

Joe B. Richards, Chairman

Ronald Somers

Al Densmore

Fred Burgess

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION OF THE STATE OF OREGON

IN THE MATTER OF THE ADOPTION OF A PERFORMANCE STANDARD FOR OPEN AGRICULTURAL BURNING	))))	RESOLUTION

It appearing that the performance standard submitted by the City of Eugene would adequately provide for protection of the health of residents of the south Willamette Valley and, at the same time, allow burning to occur in substantial amount,

IT IS HEREBY RESOLVED that:

1. The Department is directed to model the effects of the operation of this standard on this summer's burning;

2. Such standard will be submitted as a revision to the State Implementation Plan by January 1, 1980 if, after hearing, the Commission finds that,

   a. Use of this standard would not be contrary to the criteria set forth in Section 110 of the Clean Air Act; and

   b. By use of this standard alone, more than 150,000 acres would have been burned during the 1979 summer burning season.

Joe B. Richards, Chairman

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Fred Burgess

M E M O R A N D U M

August 6, 1979

TO: Environmental Quality Commission

FROM: Terry Smith, Environmental Analyst

SUBJECT: FIELD-BURNING PERFORMANCE STANDARD AND RULE CHANGES

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We believe, then, that the 50-60 percent relative humidity restriction is a reasonably available, continuous emissions control measure for the Willamette Valley. Relative humidity restrictions are easily enforced and administered. These restrictions will reduce emissions and the impact of any smoke intrusions which occur.

Ignition Techniques

In a recent emergency hearing, the rules on ignition techniques to be applied to annual ryegrass were changed. There is evidence that into-the-wind strip lighting reduces both emissions due to its similarities to backfiring, and ground-level smoke impact due to rapid heat release and good plume rise. The technique has not been required on perennials, due to uncertainties about burnout.

The perimeter ignition technique tested last year was adopted as a substitute for strip lighting and the rule now applies to all grass types. This technique requires the simultaneous ignition of all sides of a field, and it appears to resemble headfires on all sides of the field. As a result, this method is able to capture low-energy smoke that normally remains at ground level and carries it to high elevations, thereby reducing ground-level smoke impact. It seems safe to assume that the emissions from this ignition technique would equal or exceed a regular headfire, and that burnout on perennials would not be a problem.

Perimeter lighting does not satisfy the requirements of continuous emissions controls, since it could increase emissions. The temporary rule is vague and does not clearly differentiate current headfire practices from what is defined as perimeter lighting.

To meet the requirements of the Clean Air Act, reduce the possibility of smoke impact, and gain full-scale experience with both emission techniques, some rule changes must be made. Strip lighting should remain the preferred method on annuals and should be the only method used on annuals late in the season when regrowth and rain have reduced plume rise. Perimeter lighting should be defined

clearly--simultaneous ignition of all sides of the field--and be an optional method on perennials for this season. If successful, perimeter lighting would become a preferred method for perennials next year.

South Priority Burning

The present south priority rule is a change from last season. Last year's rules banned south priority burning upwind of Eugene. To allow south priority growers close to the Eugene-Springfield AQMA some limited opportunity to burn, backfire burning upwind of highways was allowed while maintaining a minimum visibility of one-half mile. The Harrisburg traffic accident showed that even a remote problem with this practice (the occurrence of a "wild" fire) led to unacceptable consequences. With the elimination of this opportunity to burn, one of the few remaining alternatives left was implemented in this year's rules. Limited burning upwind of Eugene would be allowed if the smoke could be kept above 3,000 feet over the AQMA.

As we have stated previously, we oppose this rule. Aiming the smoke to go over Eugene and Springfield amounts to trying to shoot the apple off a person's head. This obviously increases the possibility of an unintentional smoke intrusion occurring. The pre-1978 rules governing south priority areas used a similar concept; upwind burning would be allowed when it was thought that visibility would not be reduced below 12 miles. Neither this concept nor the upwind-backfiring procedure worked. The adopted rule has not been tested and we have seen no reason to believe that it will work either. This rule should be deleted.

Enforcement

There is the belief, widely held by all parties, that substantial amounts of illegal burning have occurred since 1976. If a current project to use satellite photographs to determine the amount of acreage burned is successful and finds this to be true, additional enforcement regulations and staff should be put in place. One potential side benefit of the performance regulation and the possibility of increased burning this might allow is a reduction of the pressures that lead to illegal burning.

Research

The Governor has asked that aggressive research be conducted. The health effects of smoke is presently the most neglected area of research. The Department's chemical mass balance analysis in both Portland and the Valley shows that vegetative burning smoke is a close second to soil dust as the largest contributor to TSP concentrations and that it is by far the largest contributor to fine suspended particulate concentrations. The same is probably true to other areas of the Pacific Northwest. Field burning is only one type of vegetative burning.

Every field burning bill has called for health effects to be studied. No studies have been conducted. Since EPA is mainly concerned with eastern urban area-type pollution, they are not going to conduct studies either. We have talked with both Region 10 and Research Triangle Park, and neither group has funding available for health effects research on this problem.

Potentially, smoke could be a far more serious threat to human health in the Northwest than EPA's relaxation of the ozone standard, which has been a major concern of the Commission. We urge that the Commission direct the Department to--on a high-priority basis--develop a proposal for a prospective epidemological study to begin in 1980. A number of sources of funding are possible, including appropriations from the Legislative Emergency Board and from other states and agencies in the region.

The Department should also be directed to develop legislative proposals to encourage straw use. A few markets have been identified that are nearly economically feasible for the entry of straw. The removal of institutional barriers and the development of short-term incentives could speed up the entry of straw into these markets. One example of such a proposal is removal of the weight-mile tax on trucks hauling straw for a five-year period.

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PROPOSAL FOR AN AIR QUALITY PERFORMANCE REGULATION FOR FIELD BURNING SMOKE MANAGEMENT

Introduction

The notion of a performance standard for field burning arose out of a desire by the City of Eugene to end the conflict over acreage limits and burning rules and to allow greater flexibility in the administration and operation of the smoke management program. In addition, such a standard would allow a more traditional relationship to be established between DEQ, the regulatory agency, and the polluter by allowing the growers to assume operation of the smoke management program and giving DEQ standards with which to regulate field burning. The standard may also allow the simplification of the field burning portion of the state implementation plan.

In essence, a performance standard is some criteria which formally spells out the relationship between the need to maintain good air quality and the need for open burning of grass fields. Ideally, these criteria should encourage a maximum amount of burning, with little immediate air-quality impact, and be flexible enough to allow the adjustment of all burning parameters, including acreage, in order to meet this goal. The terms of the maximum amount of burning and little immediate air-quality impact should be defined through public, technical, and political processes. Currently, these terms and their relationship are only vaguely defined in field burning rules. As a result, the daily operation of the smoke management program requires that the personnel involved make individual and to some degree subjective judgments about such things as: What constitutes a significant chance of a smoke intrusion occurring as a result of a burning release? What is a tolerable smoke intrusion? and, what is the proper balance between smoke intrusions and the total acreage burned? Such judgments will be strongly affected by the viewpoint and experience of the personnel involved, their perceptions of how hazardous smoke intrusions are, whether or not an intrusion has occurred recently, what political pressures have been exerted recently, changes in personnel, and many other factors. Certainly, a more sound way of determining the uses of the air shed is a desirable goal. Development of a performance standard is one way of achieving this goal.

The field burning monitoring and analysis program conducted by DEQ this summer, combined with the Department's historical field burning records, provides new data for developing regulatory policy. One component needed to develop a sound and democratic policy remains missing, however--sufficient knowledge about the adverse health effects related to smoke intrusions. Until a sound health effects study has been conducted, regulation of field burning will remain somewhat of a subjective process.

The remainder of this report describes the logical and technical basis for a particular performance standard. First, the most immediately available options for controlling the air quality impact of field burning are discussed. Then, selected results of a lengthy statistical analysis will be presented, which describes the historical relationships between burning activity, smoke intrusion incidences, and air quality impacts. For reasons of brevity, the

methods and complete results of this analysis will not be presented. Finally, a specific performance standard is proposed, and the likely outcome of its application is described for various scenarios of burning activity and seasonal weather conditions.

Regulating the Air Quality Impact of Field Burning

The relationship between an air polluter and the occurrence of serious air pollution is somewhat of a chance process, due to the unpredictableness of the weather. This is true for all pollution sources, whether it be the auto or field burning. Regulation of air quality then amounts to balancing the amount of emissions from sources with the frequency of occurrence of adverse weather so that the probability of serious air pollution occurring is acceptably low. The additional option of timing the release of emissions is available for some intermittent sources like open burning, but this does not change the chance nature of air pollution.

The smoke management program was designed mainly to take advantage of the timing options of field burning. Under this program, two types of smoke intrusions occured prior to 1978. The old rules allowed burning of south Valley priority areas around cities, highways, and airports when they were upwind of the Eugene/Springfield area. Operationally, smoke management attempted to balance the daily amount of south priority burning with weather conditions so that the resulting smoke intrusion would not reduce visibility in Eugene/Springfield below 10-12 miles or produce a nephelometer B_{scat} value greater than 2.4. Besides these intentional intrusions, unintentional smoke intrusions occur, and will continue to occur, from all types of burning whenever unforecast weather changes occur. Under the 1979 rules, some upwind south priority burning will be attempted under more restrictive conditions.

Techniques available in the near future for improving the timing and dispersion of smoke plumes include improved weather data and greater understanding and use of rapid ignition techniques.

Until recently, the only emission reduction techniques discussed for field burning were acreage limitations and the mobile field sanitizer. For economic reasons, the sanitizer does not seem to be feasible at this time. While acreage reduction is still the most effective way of limiting emissions, it is also the most drastic in its effect on the growers. It is now clear that restrictions on straw moisture and into-the-wind strip lighting are very effective control techniques.

Clearly, wind direction is the most important factor in determining human exposure to smoke, but when the wind is blowing the wrong direction, improved burning techniques and emission reduction techniques become important. The overall importance of these improved techniques is related to how often a mistaken weather forecast is made which results in a smoke intrusion.

Review of Historical Data to Determine Occurrence of Smoke Intrusions

One way of trying to determine how frequently mistaken weather forecasts produce smoke intrusions and what factors influence the frequency of occurrence and intensity of these intrusions is to review burning and intrusion records

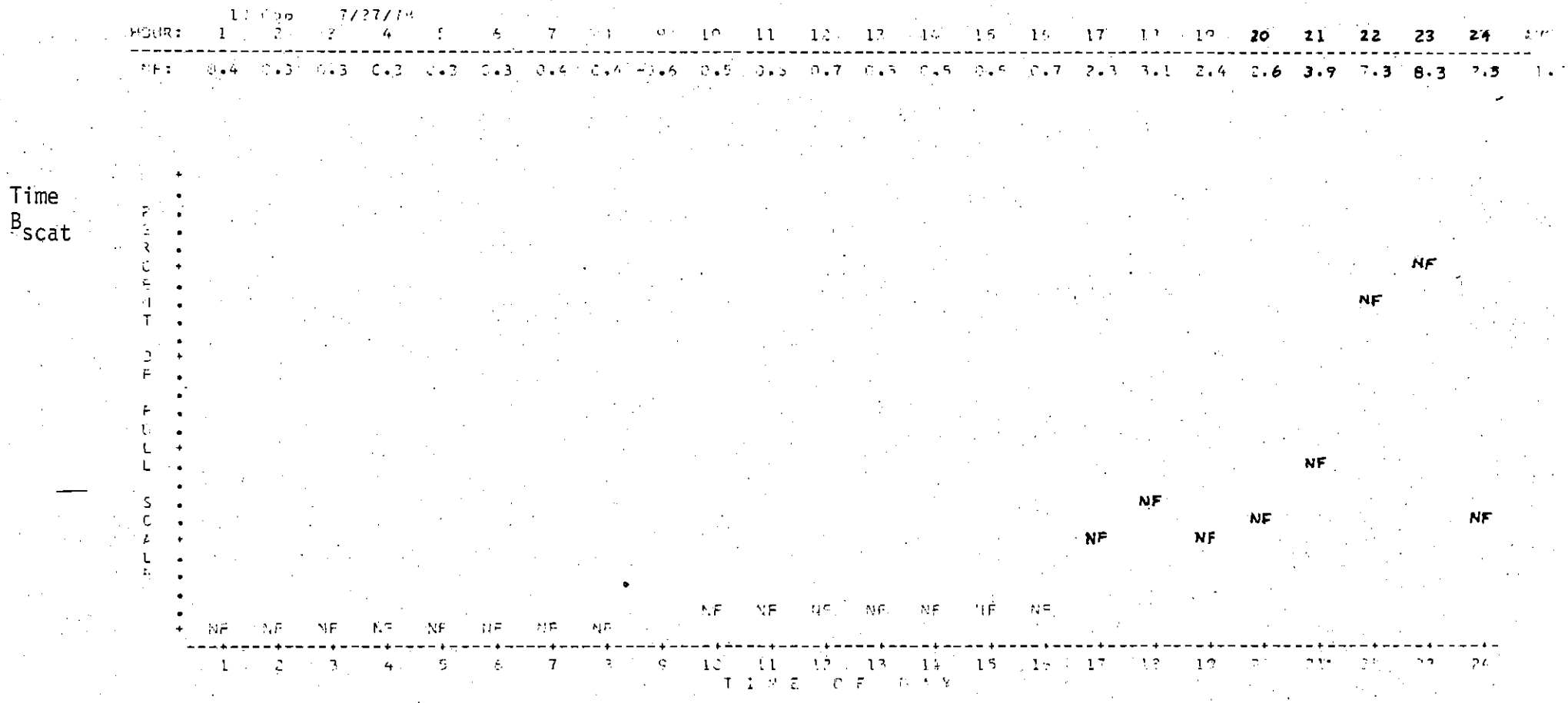

Figure 1. Typical daily nephelometer data for a smoke intrusion into Eugene on 7-27-78. Smoke intrusion began just after 1600 and reaches a peak of 8.3 at 2300 and then deminished rapidly.

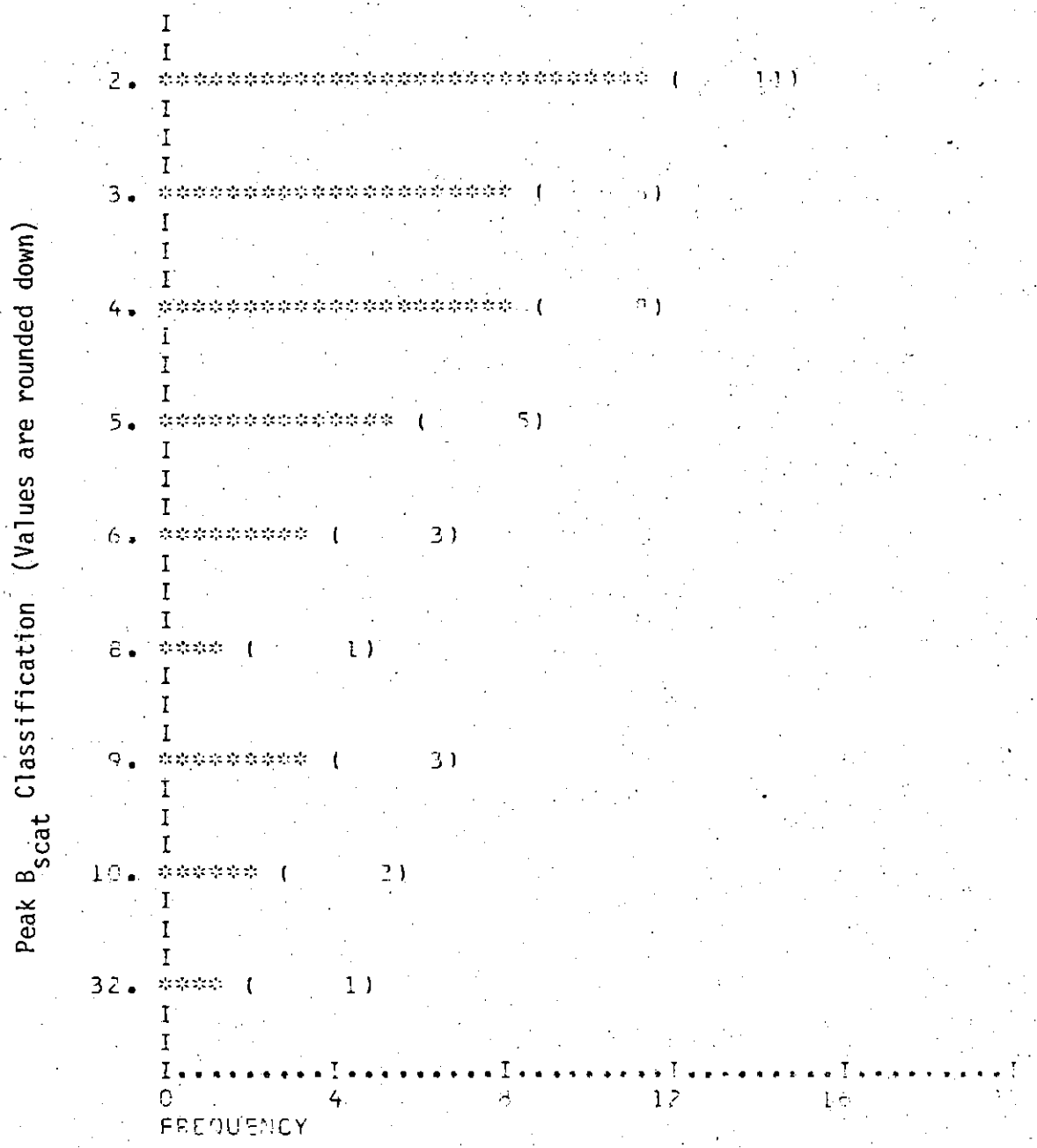

Figure 2. Frequency distribution of peak one-hour B_{scat} during non-south priority smoke intrusions into Springfield from 1973-1977.

from previous years. Records on the daily amount of burning during a season were obtained from DEQ reports for 1970 through 1977 seasons. Smoke intrusion records have been kept for Eugene and Springfield since 1973 in the form of hourly-average nephelometer readings. A field burning intrusion is noted for those times when smoke from field burning causes the hourly average B_{scat} to exceed 2.4. For comparison, the daily average B_{scat} is about 1.0 in Eugene and Springfield during the burning season.

Each nephelometer recording of a smoke intrusion shows the duration of the intrusion and its intensity as shown in Figure 1. For this intrusion, the nephelometer exceeded 2.4 at 6 p.m., returned to 0.7 at 1 a.m. (next day not shown), and reached a one-hour peak of 8.3 at 11 p.m. However, the intrusion actually began an hour or more earlier. For this reason, two methods are used for determining the duration of smoke intrusions in this analysis. One is the traditional method of totalling the hours when B_{scat} is greater than 2.4, and these will be called 2.4 hours or hours. The other method starts (or stops) counting hours when B_{scat} goes 0.5 above (or below), the baseline values which is defined as the three-hour average B_{scat} just before the intrusion begins. Estimates from this method will be called the true duration of the intrusion.

At the simplest level of classification, smoke management divides burning into three areas--north Valley burning, south Valley burning, and south priority burning. On a given day, burning may be allowed in one or more of these areas, depending on the weather. Since new burning rules restrict south priority burning, it was necessary to classify the previous smoke intrusions according to which of the three areas the intrusion came from. This was done using National Weather Service wind data from the Eugene and Salem airports to perform at wind trajectory analysis.

Lastly, the statistical analysis required an estimate of the actual total acreage burned each year. Up until 1975, there were few restrictions on the total burned, so it is likely that the reported values for 1970-74 are reasonably accurate. When acreage limitations began in 1975, increasing amounts of illegal burning began. Estimates of the actual total acreage burned during the 1975-78 seasons were made after discussions with DEQ staff and growers. Tables 1 and 2 show some selected statistics from the analysis of this data.

During 1978, DEQ operated a 10-station network in which fine particulate air samplers were operated simultaneously with nephelometers. Nephelometer readings are a function of, among other factors, the concentration of particles in the size range 0.1 to 1.0 micrometers (um) among other things. Since five years of historical nephelometer data exists, development of a relationship between nephelometer readings and fine particulate concentrations would be useful for estimating the impact field burning has had on particle concentrations as measured by the Hi-Vol sampler. A correlation and regression analysis was carried out between the fine particulate concentrations as measured by the Hi-Vol Cascade Impactor (samples particles smaller than 1.1 micrometer), the 24-hour average nephelometer reading, and relative humidity (where available) for smoky days when average B_{scat} was greater than 1.0. The regression equations produced from this analysis are shown in Table 3 for Eugene, Springfield, and Lebanon.

TABLE 1

Some Statistics on Smoke Intrusion for the 1973-1978 Burning Seasons

Year	Reported Total Burn	Estimated Actual Burn	Total 2.4 Hrs Smoke Intrusions Eugene	Springfield	Actual Hrs Smoke Intrusions Eugene	Springfield	Duration of Burning Season	# of Smoke Intrusions Eugene	Springfield
1973	263,000	263,000	27	98	88	180	105	14	18
1974	282,700	282,700	63	105	169	226	99	17	18
1975	186,260	190,000	24	34	84	67	88	7	7
1976	165,712	190,000	11	20	24	73	84	6	8
1977	171,500	210,000	6	44	34	91	84	5	6
1978	154,000	190,000	8	11				4	2

TABLE 2

2.4 Hours of Intrusions and Average Peak Hour B_{scat} for Intrusions from Three Smoke Management Areas

	Eugene						Springfield					
	North Valley		South Valley		South Priority		North Valley		South Valley		South Priority	
Year	Hours	Peak	Hours	Peak	Hours	Peak	Hours	Peak	Hours	Peak	Hours	Peak
1973	0	-	9	3.5	18	3.5	8	3.8	35	5.0	55	4.7
1974	1	4.0	41	9.5	21	3.0	17	4.0	63	15.0	25	3.
1975	5	3.7	3	4.3	16	4.1	6	3.5	8	6.3	20	4.2
1976	10	4.2	1	3.6	0	-	7	3.6	10	6.0	3	2.7
1977	0	-	1	2.5	5	3.5	2	2.8	16	10.2	26	3.9
Average	3.2	4.0	11	4.7	12	3.5	8	3.5	26.4	8.5	25.8	3.7

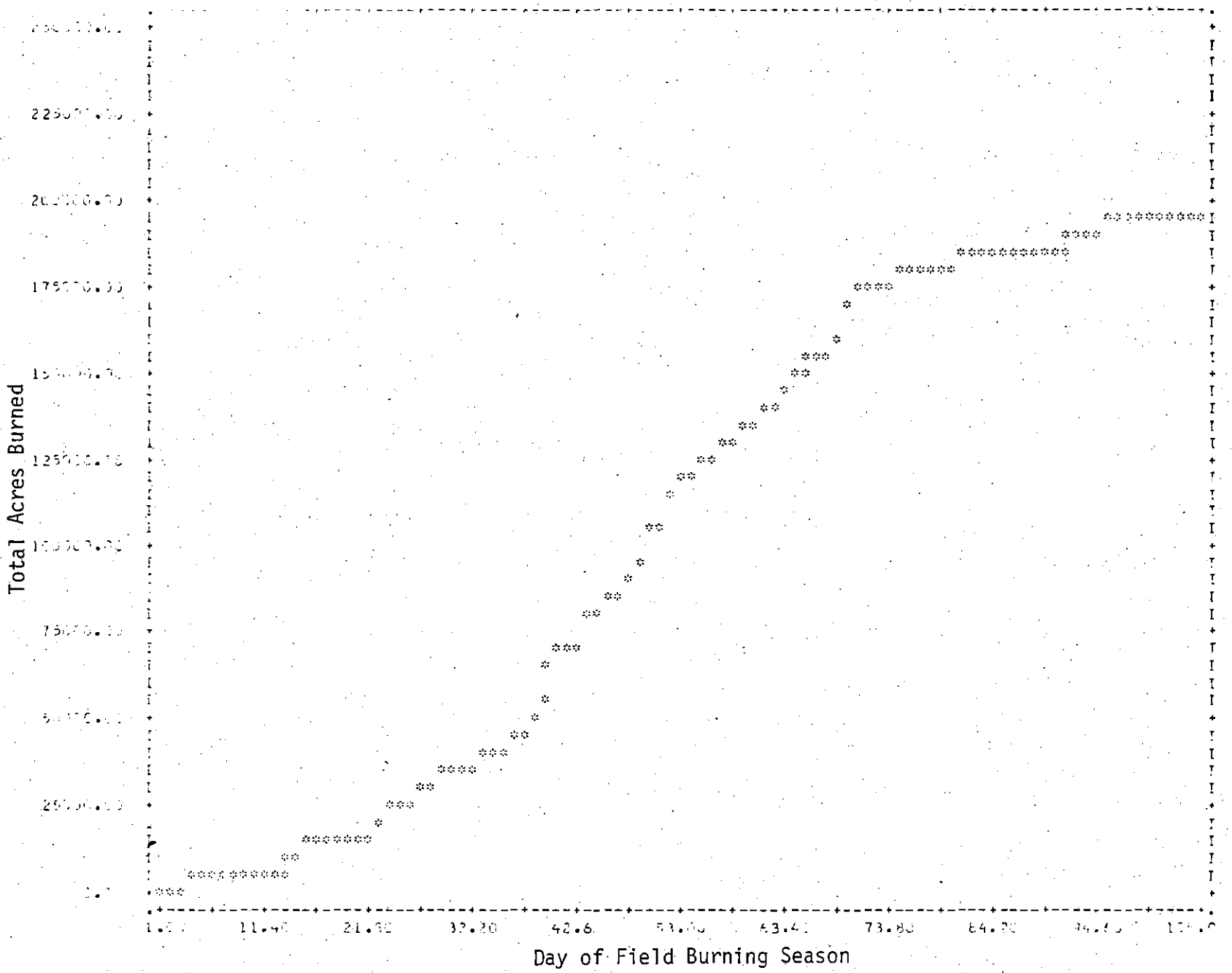

Figure 3. Plot of cumulative acres burned by day of the season average of 1970-1977.

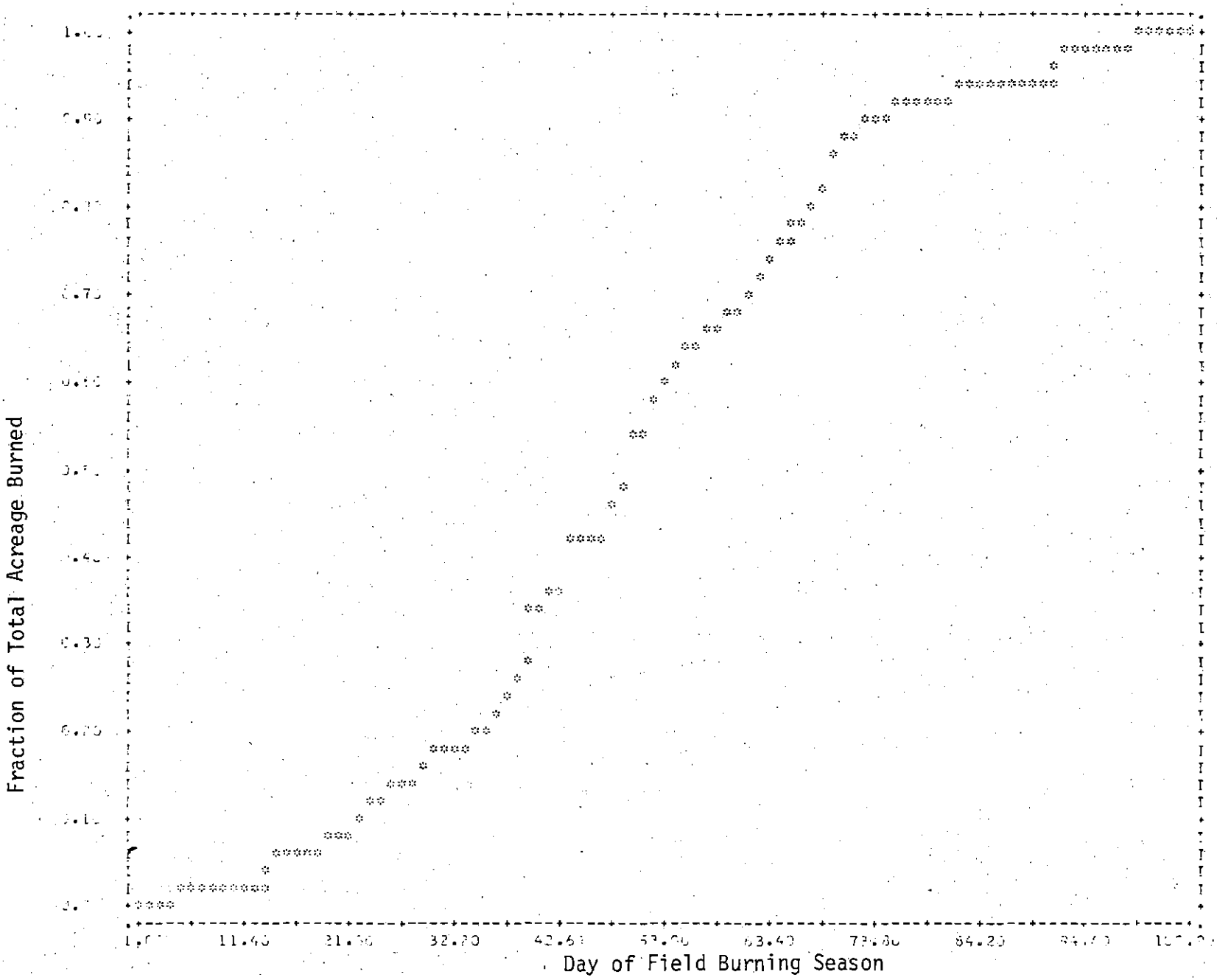

Figure 4. Plot of fraction of total burn accomplished by day of the burning season, average of 1970-1977

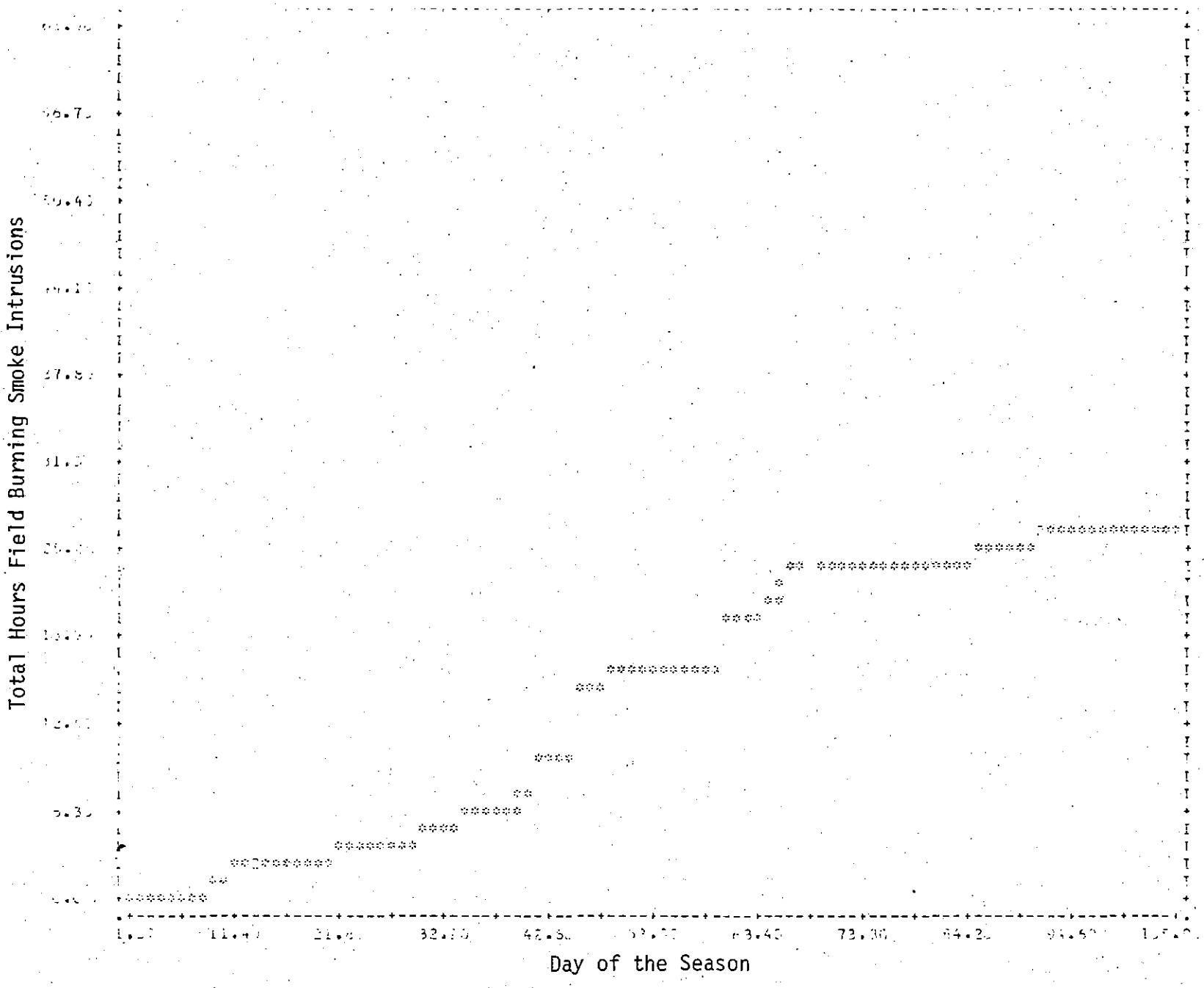

Figure 5. Plot of cumulative hours of all field burning. Smoke intrusion's vs. day of the burning season for Eugene, average of 1973-1977 seasons.

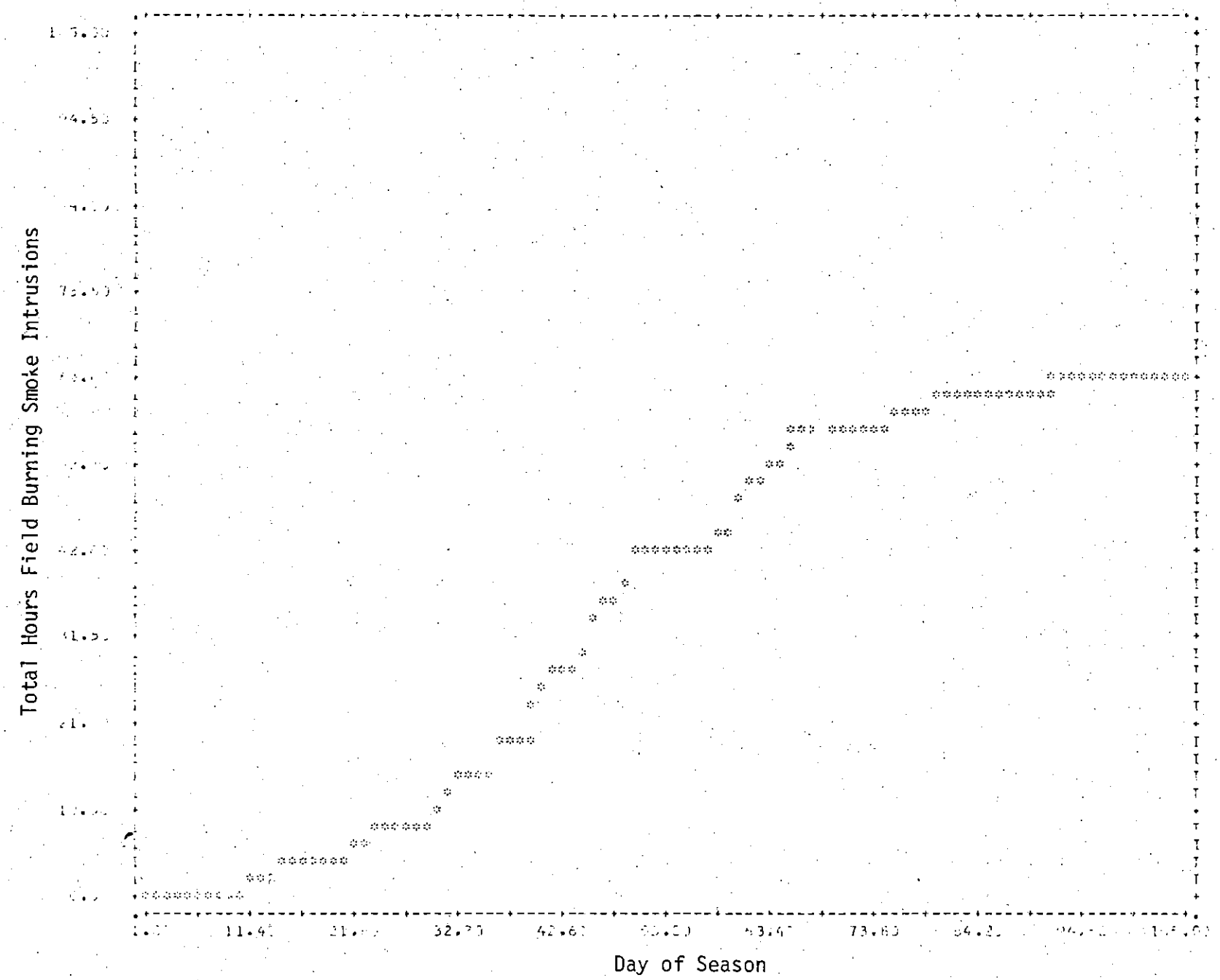

Figure 6. Plot of cumulative hours of all field burning smoke intrusions vs. day of the burning season for Springfield average of 1973-1977 seasons

TABLE 3

Regression Equations for Predicting Fine Suspended Particle (FSP) Concentration from B_{scat} and Relative Humidity (RH) Readings

Eugene

$$FSP\ (in\ ug/m^3) = 29 + 15.2\ (B_{scat}) - 0.3\ (RH)$$

Multiple regression Coefficient

$R = 0.75$, Standard Error $S = \pm 8.1\ ug/m^3$

Springfield

$$FSP\ (ug/m^3) = 17.6 + 16.6\ (B_{scat}) - 0.18\ (RH)$$

$R = 0.89$, $s = \pm 4.0\ ug/m^3$

Lebanon

$$FSP\ (ug/m^3) = -2.6 + 19.8\ (B_{scat})$$

$R = 0.84$, $s = \pm 6.7\ ug/m^3$

TABLE 4

Summary of TSP Contribution of Field Burning Smoke Intrusions 1973-1977

	Average Actual Duration of Smoke Intrusion (Hrs)	Average TSP Contribution (ug/m^3)	Worst Intrusion Duration (Hrs)	(9/3/74) Contribution (ug/m^3)
Eugene	8.1	9.6 ± 2.4	17	61 ± 17*
Springfield	11.2	13.2 ± 2.2	25	186 ± 35*

* These high contributions would not have been measured on a single Hi-Vol Sample because of the timing of the samples and the intrusion. The intrusion extended through two days of sampling, so part of the contribution would have been collected on the first day's Hi-Vol filter and the remainder on the second day. Taking this into account, the TSP contribution on the first day of the intrusion would be about 98 ug/m^3 in Springfield.

To test the usefulness of these prediction equations, estimates of the impact of two smoke intrusions were made using these equations and standard spectroscopic methods, and the results compared to impact estimates from other instrumental methods used by DEQ. On August 3, a severe slash smoke intrusion occured in south Valley cities. The regression equation estimate of the contribution this intrusion made to fine suspended particulate concentrations in Eugene at 39 micrograms per cubic meter (ug/m^3) with a 90-percent confidence interval of ± 10.8 ug/m^3. From a total carbon analysis, the contribution to total suspended particulate (TSP) was estimated at 43 ug/m^3. Since 90 percent of the total particulate in smoke is smaller than 1.1 ug/m^3, these two measurements agree almost exactly. An analysis of background concentrations show that the August 11 field smoke intrusion contributed 55-65 ug/m^3 to TSP concentrations at Lebanon. The regression estimate from nephelometer data is 60.5 $ug/m^3 \pm$ 15.2 at the 90 percent confidence level. This and other comparisons justified the use of the regression equations to estimate the air quality impact of field burning smoke intrusions on Hi-Vol-measured TSP concentrations in previous years. Table 4 summarizes the results of these estimates.

Several conclusions are apparent from all this data. Intrusions occur more often, are more intense, and last longer in Springfield. Upwind burning in south priority areas accounts for 44 percent of all intrusion hours, while intrusions from south and north Valley areas contribute 43 and 13 percent, respectively. The elimination or severe restriction of upwind south priority burning is extremely effective in reducing smoke intrusions in Eugene and Springfield. Intrusions from the south Valley are less frequent, but are of long duration and are the most intense. In the past, the average field burning smoke intrusion has made a small, but significant, contribution to 24-hour average TSP concentrations in Eugene and Springfield. Field burning can, under worst conditions, have a major impact when unexpected weather conditions develop.

Since Springfield is most affected by field burning intrusions, a performance standard that successfully protects that area while still allowing significant amounts of burning will also be usable in all other areas. Therefore, the remainder of the analysis will focus on the data from Springfield.

The Relationship Between Smoke Intrusions and Acreage Burned

From common sense, we might suspect that there is a relationship between burning activity and the occurrence of smoke intrusions. The more often burning is allowed, the more often intrusions will occur. We might also suspect that the skill and efficiency of the smoke management program, the capriciousness of the weather during a season, and the improvement of burning and management techniques would also play a role. An extensive correlation and regression analysis was carried out to test these hypotheses. Since only burning and intrusion activity can be quantified, the other factors cannot be entered into the analysis and will have to be assessed separately.

The correlation between the duration of a burning season and the number of smoke intrusions during that season, and between the estimated total acres burned and the total 2.4 hours of all field smoke intrusions, is extremely

TABLE 5

Important Correlations for Burning Activity and Smoke Intrusions
for Springfield, 1973-78

Number of smoke intrusions during a season vs. length of burning season, r = .98

Number of acres actually burned in a season vs. number of 2.4 hours of smoke intrusions, r = .98

Number of south priority acres burned on intrusion days vs. 2.4 hours of intrusions, r = .99

Number of acres actually burned vs. 2.4 hours of non-south priority intrusions, r = .94

Peak B_{scat} value during an intrusion vs. 24-hour fine particulate contribution of intrusion, r = .92

Peak B_{scat} value during an intrusion vs. afternoon relative humidity on day of burn, r = .37

TABLE 6

Regression Equations for Predicting the Number of 2.4 Hours of Smoke Intrusions
in Springfield from Total Acreage Burned in a Season

For all types of smoke intrusions

$$2.4 \text{ Hours} = -142.4 + 0.000892 \text{ (acres)}$$
$$R = 0.987, \; s = \pm 7.1 \text{ hours}$$

For non-south priority smoke intrusions

$$2.4 \text{ Hours} = -105.2 + 0.000615 \text{ (acres)}$$
$$R = .94, \; s = \pm 9.8 \text{ hours, 90\% confidence interval} = \pm 21 \text{ hours}$$

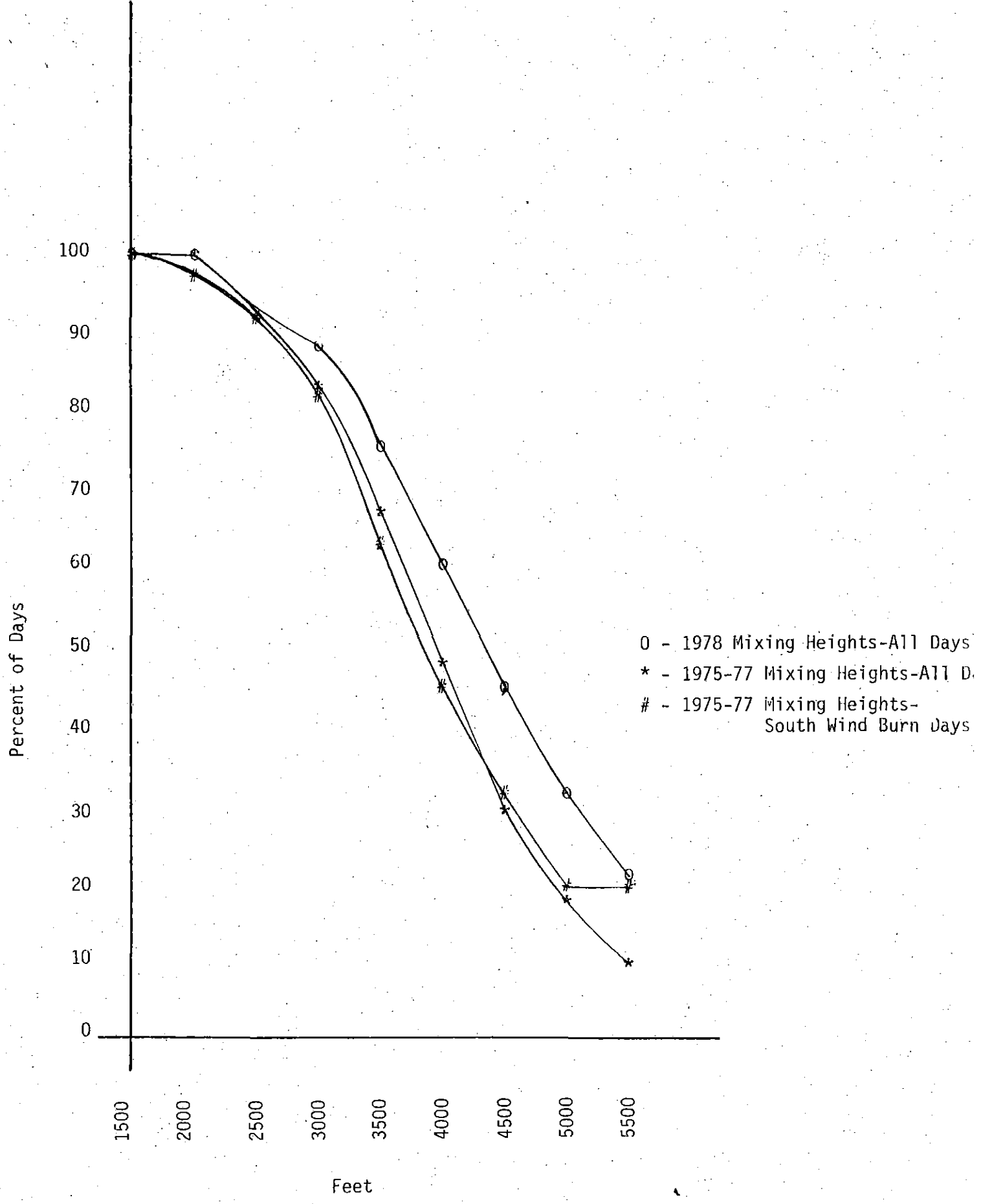

Figure 7. Distribution of Mixing Heights on Burning Days
Cumulative Percent of Days With Mixing Heights Greater than Value Show

high--correlation coefficient r = 0.98 for 1973-77. These high correlations are probably the result of the upwind south priority burning rules during those years since the correlation between the total south priority acreage burned on intrusion days is also extremely well correlated with 2.4 hours of intrusions--r = 0.99. This conclusion is also supported by the fact that the relationship between actual acreage burned and non-south priority smoke intrusion hours is not consistent--r = 0.94 for 1973-78.

The high correlations encouraged the development of regression equations to describe the relationship between total acreage burned and the number of 2.4 hours of all types of intrusions and for non-south priority intrusions for the 1973-78 seasons.

The regression equations for Springfield are shown in Table 6. Since current rules restrict the possible occurrence of smoke intrusions from south priority areas, the latter equation in Table 6 will be used for making predictions of future intrusions. This equation predicts that if 187,000 or 250,000 acres are burned under average conditions and the new burning rules, it is most likely that 10 and 49 hours, respectively, of smoke intrusions will occur in Springfield. However, the large confidence interval indicates that there is a wide range of possible outcomes from burning these amounts.

The full statistical analysis revealed that the peak one-hour B_{scat} value was well correlated with the estimated contribution a smoke intrusion makes to 24-hour average fine particulate concentrations. This correlation found that intrusions with one-hour peak B_{scat} values over 5.6 are likely to contribute over 20 ug/m^3 to 24-hour fine suspended particulate concentrations. Figure 2 shows the frequency of occurrence of the peak B_{scat} value for intrusions in Springfield from 1973-77. Intrusions with peaks greater than 6.0 have occured 11 times during that five-year period, but only four of those have occurred in the last three years. The peak intensity of an intrusion was also found to be positively correlated (r = 0.37) with the average afternoon relative humidity on the day of the burn producing the intrusion. Since relative humidity has a strong effect on straw moisture, and thereby particulate emissions from field burning, this finding is not surprising.

Burning activity and smoke intrusion records were compiled into a standardized form to show the time history of burning and intrusions during a season so that burning and smoke intrusion activity and seasons could be compared. This standardized form is shown in Figures 3, 4, 5, and 6. On the average, burning seasons have lasted 13 weeks and half the acreage burned and half the non-south priority smoke intrusions have occurred by the 45th day of the season. Most of the burning is accomplished during weeks five through nine.

Distribution of Mixing Heights

The Department's meteorological data for 1975-1978 was examined to determine the distribution of mixing heights on burning days (see Figure 7). The 1978 season was found to be exceptional. There were nearly twice as many burn days with mixing heights over 5,000 feet in 1978 as in the three previous seasons. The average mixing height for 1978 was well over 500-feet greater than the previous seasons.

For 1975-77, south wind burn days were found to have approximately the same distribution of mixing heights as all burn days combined. Non-south priority smoke intrusions were found to be evenly distributed over burn days with mixing heights greater than 2,500 feet. After September 1, there were five north wind burn days and four south wind burn days with mixing heights greater than 4,000 feet.

Limitations on the Data and Analysis

As stated earlier, the acreage amounts reported to DEQ are not accurate. If the amount of unreported burning can be assumed to be proportional to the reported burn, then the cumulative percentage burn accomplished by a given day will be representative of the actual burning activity.

One obvious limitation of the smoke intrusion records is the exclusion of intrusions that do not exceed 2.4 B_{scat}. Even if numerous low-intensity smoke intrusions have occurred over the last six years, their effect on air quality and this analysis will be small. Excluding them will result in a slight underestimation of the air quality impact of field burning.

The classification of smoke intrusion by area of origin is difficult to do retrospectively. Surface wind data was used to calculate smoke trajectories for this classification. Surface winds are usually slower than upper level transport winds. Since north Valley and south priority burning usually occurred simultaneously, it is possible to mistakenly classify an intrusion as coming from south priority burning using this wind data. After reviewing the data, it is believed that these errors do not exceed ten percent.

The use of regression methods to describe the relationship between acreage burned and hours of smoke intrusions during previous years is likely to cause the most controversy. A full discussion of the limitations of the results of this method and the conclusions drawn from it is therefore called for. A regression of smoke intrusion hours on total acres burned presumes to measure the systematic relationship between those two variables and estimates the supposedly random departures from that relationship. If, however, there has been steady improvement in smoke management each year, that reduces the likelihood of an intrusion independent of the acreage burned, the regression equation would erroneously attribute part of that improvement to the acreage-hours relationship and part to the estimated error term.

If, on the other hand, improvements in smoke management had the effect of restricting the acreage burned by prohibiting burning on more of those marginal burning days when intrusions are most likely, the regression equation would correctly estimate the relationship between the acreage burned and smoke intrusions. While not denying the former effect of improved smoke management, it is the assertion of this analysis that under the old burning rules, improved smoke management mainly had the latter effect. Even if this conclusion is wrong, the regression equations are still useful in developing a performance standard since they would overestimate the number of hours of smoke intrusions that are likely to occur in the future from a given amount of burning. In any case, as improved burning techniques are developed, the proposed standard will become less and less restrictive and more acreage will be burned without exceeding the standard.

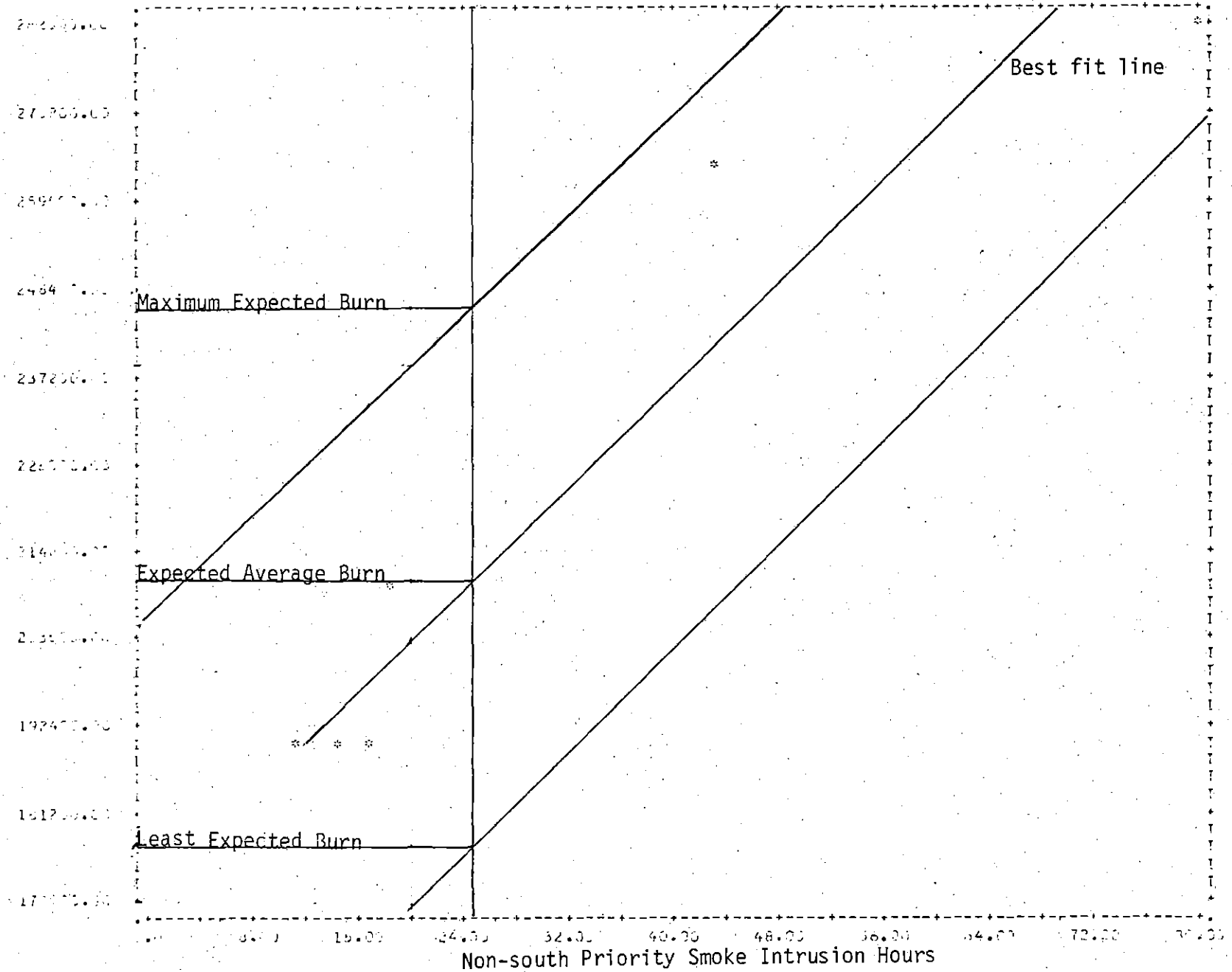

Figure 8. Best fit regression line and 90% confidence interval for non-south priority smoke intrusion hours per season vs. estimated actual acreage burned in a season for 1973-1978. Shows average, worst and best seasons for a 25-hour smoke intrusion limitation.

The Proposed Performance Standard

Conceptually, the proposed standard is based on EPA SIP planning guidelines. EPA has stated that any source category that contributes more than 10 ug/m^3 to 24-hour TSP concentrations must be considered significant. The statistical analysis shows that intrusions which are more than five-hours long contribute 10 ug/m^3 on the average. More than two such intrusions begin to pose problems for the achievement of 24-hour TSP standards.

Therefore, additional restrictions are imposed after 10 hours of smoke intrusion to reduce the chance of additional significant intrusions occuring. A simple way of achieving this is by increasing mixing height restrictions for burn days. This would limit burning to fewer good days and lower the probability of additional intrusions. The air quality imact of an intrusion is not fully represented by the duration of the intrusion, so an additional parameter is included--every hour of B_{scat} over 5.6 will count as two hours. The inclusion of this parameter also encourages the use of emissions reduction techniques, such as moisture restrictions and strip lighting.

The first restrictions after 10 hours of smoke instrusions with B_{scat} greater than 2.4 are 4,000-foot mixing for north wind days and 3,000 feet for south wind days. This would reduce available days by one-forth. Additional restrictions would be imposed if the equivalent of five additional hours of smoke intrusions occurred (see Table 7).

Table 7

Proposed Mixing Height Requirements for Each Level of Smoke Intrusions

Cumulative Hours Smoke Intrusions	Required Mixing for Burning	
	North Wind Days	South Wind Days
10	4,000	3,000
15	4,500	3,500
20	5,000	4,000
25	5,500	4,500

After the mixing height restrictions have reached the 15-hour level, the likelihood of additional intrusions would be very small but some burning would still be possible even late in the season. At the 25-hour level, burning would be effectively shut off except for those rare days with extremely good mixing. Only one or two of those days occur in September and October.

The occurrence of more than 25 hours of field burning smoke intrusions into a populated area is an indication that either smoke management is unsuccessful, that too much burning has been attempted, or that advantage was taken of the rules by a large late season burn and resulting intrusions. To prevent this situation, the accumulation of 25 hours or more would cause the mixing height requirements for the next season to initially start at 4,000 feet and 3,000 feet for north and south wind days respectively.

There are some objections that have been raised to performance standards of this type. The growers have objected to limiting the amount of burning allowed in the remainder of a season by what has happened during the previous part of the season. They argue that the meteorological conditions for the day should dictate how much burning is conducted on that day. Some justification may exist for this type of performance standard based on the persistence of meteorological patterns during a season. It must be pointed out, however, that the proposed regulation uses tighter mixing height restrictions as a control measure only as a last resort. If all other control measures are used and the smoke intrusion limitation is still exceeded, then the drastic step of reducing burning opportunities must be taken to reduce the probability of exceedances during the remainder of the season. If daily burning amounts, locations, methods, and meteorology are all being correctly matched by smoke management, the standard will have no effect.

The Effects of The Performance Standard under Various Conditions

It is possible to test the outcome of using the performance standard in a variety of burning seasons, using the standardized burning activity and smoke intrusion records from previous years. Figure 7 shows that if 25 hours of smoke intrusions is the maximum amount to be allowed during a season, 211,000 acres could be burned during an average year with that amount of intrusions in Springfield. During a season with extremely adverse weather, 178,000 acres could still be burned with a 25-hour limit. With good weather or improved burning techniques, 246,000 acres could be burned. In fact, during an average year at least 187,000 acres could be burned without the accumulation of enough hours of smoke intrusions to impose any of the restrictions. During the worst expected year, the first level of restriction would be reached if 153,000 acres were burned. In a good year, 222,000 acres could be burned without restrictions being imposed. In all cases, additional acreage could be burned under more strict requirements.

Worst case conditions for application of the standard would occur if a lengthy intrusion occurred early in the season due to bad weather. This is exactly what happened in 1977. Springfield received a 14-hour intrusion with a peak B_{scat} of 9.3, five hours over 5.6, and a 50 ug/m^3 impact on TSP the end of the third week of the season. Had the regulation been in effect, this intrusion would add up to 19 hours. The increased mixing heights restrictions would eliminate one-third of the remaining burning days and if no other intrusions occurred, 175,000 acres could be burned. In 1977, another two-hour intrusion would have occurred at the end of the ninth week of the season. Mixing height requirements would be raised another step and the season would end with 156,000 acres burned. The reported burn for that year was 171,500.

Conclusion

A performance standard for field burning has been proposed that will allow maximum burning and ensure all control measures are used to maintain a low probability of significant air quality impact occurring from field burning. The standard will perform as expected and allow significant amounts of burning and protect air quality under the range of conditions that have occurred in the last eight years. The standard can be applied to any smoke sensitive area in the Valley. Springfield has received the greatest recorded impact from field burning in the past and the standard will function correctly there.

TS:er/PW21b14

Taken by telephone from Joe Richards 7/31/79

Memorandum
Dated July 31, 1979

To: Stan Long

From: Terry Smith

Subject: Differences Between 78 and 79 Burning Rules on Moisture Content and South Priority Burning

Section 26-016(1)(c) governs the use of relative humidity restriction on north wind days. In the 1978 rules prohibition conditions were in effect if straw moisture was greater than 12% or if the forecast minimum relative humidity was greater than 50%. There was an exception from these requirements for "unlimited ventilation conditions" defined in Section 26-015(1)(d). In 1979, Section 26-010(3)(c) has been changed and no longer contains a 12% limitation, and 26-015(1)(c) has been changed from a 50% to 65% relative humidity.

Section 26-015(4)(d)(B) governs south priority burning upwind of Eugene-Springfield AQMA for 1979. This rule allows for such burning as long as the smoke stays above 3000 feet. The 1978 rules did not allow such burning but did allow north wind but not upwind burning of "special priority areas" in amounts less than 50 acres. Section 26-015(2)(a)(C).

The following note was attached to the memorandum.

To: Joe Richards

Subject: 78-79 Rules

"Maybe this will help explain our position. If there is a response we would like to be advised. Note the second paragraph--if this is correct our conversation of yesterday about 3500 feet versus 3000 feet was also not on point."

/s/ Stanton F. Long

CAS

VICTOR ATIYEH
GOVERNOR

OFFICE OF THE GOVERNOR
STATE CAPITOL
SALEM 97310

July 31, 1979

Mr. William H. Young, Director
DEPARTMENT OF ENVIRONMENTAL QUALITY
522 S. W. 5th
Portland, OR 97204

Dear Bill:

Today I am issuing Executive Order 79-14 authorizing your department to allow burning not to exceed 180,000 acres.

This Executive Order is being issued with the knowledge and approval of the City of Eugene and the Oregon grass seed growers. I have for the past several days been in communication with representatives of both. It is apparent to me that both the city and the industry felt that mandating 50,000 acres would not serve the public interest. However, there was a breakdown in communication. At this point I concluded it was appropriate for me to act as an intermediary in order to establish communication between the city and grass seed industry. The city has expressed to me their concerns about air quality. I also have my own concerns about the protection of air quality. These concerns have been incorporated into the Executive Order. The grass seed industry has given me their assurances to cooperate with the department in every way possible to insure the best burning procedures. I believe the result will be beneficial to all parties involved.

I also want you to know and communicate to the commission that I have advised both the city and the industry that if the EPA adopts its' proposed rule approving the 180,000 acre limit, I have no intention of issuing another emergency order. The determination of allowable amount of field burning should in the future be determined through normal procedures under state and federal law. The reason I feel that an order is appropriate this year is because it is apparent that the only reason EPA has not approved the 180,000 acres limit is because of procedural steps required by federal law. I have also made a commitment to exert my influence to the greatest degree possible to encourage research of alternative methods to field burning.

It is my hope that some day the matter of acreage limits will be put to rest, and if field burning is needed it will be done under your departments regulation, treated like any other air pollution source in Oregon.

I will watch with great interest the detailed results reached by your department and the EQC. It is my desire that the resolution will be done on a good faith basis involving all the interested parties.

Sincerely,

Victor Atiyeh,
Governor

VA/gh

State of Oregon

OFFICE OF THE GOVERNOR

EXECUTIVE ORDER NO. EO - 79 - 14

ANNUAL OPEN FIELD BURNING IN 1979

Under Oregon law and rules, open field burning is limited to 180,000 acres to be burned annually. Under the Federal Clean Air Act, the Oregon State Implementation Plan provides a 50,000 acre limit on open field burning. The Oregon Environmental Quality Commission (EQC) has submitted revisions of the Oregon State Implementation Plan to the Federal Environmental Protection Agency (EPA) to conform the plan to the 180,000 acre open field burning limit provided by state law and rules.

Open field burning to date has been proven to be the only feasible method for preparing fields for grass seed growing, although intensive research has been conducted and continues in search of an alternative. The growing of grass seed is a major Oregon industry, producing an estimated annual income of $70 million. It is estimated that to curtail the industry to 50,000 acres this year would bring about a gross yield loss in 1980 in excess of $23 million.

On the other hand, unregulated open field burning in the past has had a detrimental impact on air quality in the Willamette Valley which has been particularly detrimental to the citizens of the city of Eugene. However, it has been demonstrated in recent years that through an intensive smoke management program field burning can be effectively controlled to preserve air quality. In 1978 open field burning was permitted under smoke management controls administered by the Department of Environmental Quality pursuant to an Interim Control Strategy approved by EPA to a limit of 180,000 acres. As a result of this strategy, there were no "alert" days because of field burning and only 7-1/2 hours of smoke "intrusion." Air quality standards were maintained in 1978 without major incident or protest. The Environmental Protection Agency has issued a notice of proposed rule making stating that it is "proposing to approve the Oregon submittal," including the 180,000 acre open field burning limit.

Oregon's submission of a revision to the Oregon State Implementation Plan has not yet been finally approved or disapproved by the Administrator of EPA, and cannot be approved or disapproved within the four-month period which the Administrator has under the Clean Air Act to approve or disapprove such a proposed revision. According to a July 23, 1979, press release of Region X of EPA, the process of obtaining final EPA action on the 180,000 acre request cannot be completed until after the conclusion of the 1979 field burning season.

MORE

Failure to employ open field burning techniques will result in greater consumption of fuel in preparing fields for seeding and in reduced yields for the following season, thereby lessening employment associated with field preparation, harvesting, processing, transporting and sales of the grass seed industry.

ORS 468.475, as amended by section 11, chapter 559, Oregon Laws 1975, which is part of the present Oregon State Implementation Plan, provides in subsection (5) thereof, that the Governor, upon finding of extreme hardship, may by order permit emergency open burning of more acreage than allowed by subsection (2) thereof (namely 50,000 acres);

The Federal Clean Air Act, section 110(g), provides that the Governor may issue a temporary emergency suspension of the part of the applicable implementation plan for the State which is prepared to be revised with respect to such source, in specified circumstances, such as these;

It is necessary to prevent:

(i) the closing for one year or more of the field burning sources of air pollution (which sources would not otherwise be closed);

(ii) substantial increases in unemployment which result from such closing; and

(iii) extreme hardship;

IT IS HEREBY ORDERED THAT:

The provisions governing open field burning, including the 50,000 acre burning limit, in the present Oregon State Implementation Plan be suspended on a temporary emergency basis, pursuant to section 110(g) of the Federal Clean Air Act and under the authority of Oregon law. The Department of Environmental Quality is directed to implement smoke management controls using the most advanced techniques, including those proven successful during the 1978 burning season, and employing the best burning practices. The Department shall not authorize in excess of 180,000 acres for open field burning. The Department shall submit to me weekly reports with sufficient data so the Governor can determine whether this order should be continued.

++++ MORE/OVER++++

This order shall terminate upon the order of the Governor, and in any event by the 120th day following the date hereof.

Executed at Salem, Oregon, this 31st day of July, 1979.

GOVERNOR

ATTEST:

SECRETARY OF STATE

CITY OF EUGENE

INTER-DEPARTMENTAL MEMORANDUM

CITY ATTORNEY — CIVIL DEPARTMENT

To: Mayor and City Councilors Date: July 30, 1979

From: City Manager, City Attorney & Environmental Analyst

Subject: Field Burning Status

Several weeks ago the City Council directed its staff to pursue all available legal remedies to limit the air quality effects of open agricultural burning within the Eugene-Springfield metropolitan area. Such a directive was taken in direct response to the passage of SB 472 which increased the allowable burn for 1980 and beyond, to 250,000 acres.

There have been several important events in this controversy in the last two weeks. It is now the time to assess the City's options in order to re-examine short-term and long-term goals. Prior to doing so, a review of the City of Eugene's goals and motivations in the field burning battle is in order.

A. Why has Eugene resisted expansion of open burning?

The legislatively-mandated cessation of open burning was lifted by the 1975 Legislative Assembly. In its place was substituted a phasedown of burning for four years culminating in an annual burn of 50,000 acres. This phasedown was removed in 1977 and 1979 by allowing burning of 180,000 and ultimately 250,000 acres. Our legislative efforts have been both costly and unfruitful for the past two sessions. Field burning has become a political donnybrook every two years, pitting rural against urban interests.

The City's concerns with respect to field burning have included the following:

1. Health effects. Field burning at a 180,000 acre level emits nearly 27,000 tons of particulates into the Valley's airshed. And much of this is in very fine particulates which are respirable. Because these particles are easily ingested, they cause both acute and chronic health effects. No serious health effects study has been done on the effects of field smoke. We do know that burning emits substantial amounts of polycyclic organic matter (POM), a known and severe carcinogen. Scientific study needs to occur to determine the specific risks associated with POMs. Previous canvassing of physicians who specialize in pulmonary disorders reveals an increasing number of patients who require physician visits, hospitalization, or removal from this area during the burning season.

2. Economic costs. It is difficult to estimate the local economic effects from field burning. There is an economic boycott of goods and services from Eugene by the growers and their allies. Some reduction in tourism and recreational pursuits within the Valley probably occurs.

There is a larger economic effect which now looms on the horizon. The Eugene-Springfield area presently exceeds federal air quality standards. Field burning can contribute to the exceedence of those standards. Unless these air purity goals are

attained there will be a cutoff of all new industry which emits pollutants by 1982. And any increased level of field burning in the future (i.e. from 180,000 to 250,000 acres) will consume certain levels of allowable pollution increases under the Clean Air Act. This consumption will preclude certain new industries in and around the Eugene area. Similarly, federal grants (including funding for the metropolitan wastewater treatment plant) may be terminated if these increments are exceeded.

3. Preservation of agricultural land. Increasing federal regulation will shortly occur with respect to visibility impairment, emissions of fine particulates, and regulation of POM. Open burning may not survive any one of these regulatory regimes. It is certain, however, that together, these efforts will significantly reduce the level of open burning within the next ten years. Without alternative uses for this land, there may be some pressure to convert its utilization to urban uses. To foster the City's long-held goal of compact urban growth, it is now necessary to stimulate alternative and non-urban uses of land now used for grass seed production in anticipation of the future demise of open burning.

This quest can be achieved by encouraging alternatives to open burning for grass seed production and alternative crops to replace grass seed. Governmental efforts in these directions have been slow in producing results. Market forces

have been hampered by artificially high and politically set levels for open burning. Reduction in the number of allowable acres of burn from the present 180,000 acre level will stimulate these alternatives.

4. Political costs. Because of our nonattainment status, Eugene has an interest in evenhanded enforcement of air pollution laws. To the extent that present favoritism allows one industry to escape its obligations to minimize emissions, it increases the risks that, in the future, political muscle rather than technical and legal considerations will dictate the quality of our air. Political considerations have allowed four years of violations of the provisions of Oregon's clean air plan by the seed industry. This precedent together with the now familiar scenario of legislatively sought and granted exceptions and retreats from clean air goals threaten the future of our airshed.

B. Eugene's Goals

These factors have produced the following goals:

1. Removal of the field burning controversy from the political realm. Encouragement of treating the issue as a technical and legal problem rather than a test of political muscle. Establishing the primacy of federal restrictions on the necessary content of air pollution strategies.

2. Protection of the health of Eugene's residents. Development of a health assessment risk study to determine the

extent of health impairment.

3. Development of alternative burning methods which reduce the amount of particulate emissions from open burning. Development of alternative rules to maximize incentives to the growers to reduce smoke intrusions into population centers.

4. Requiring proper process for any changes in regulation of any air pollution source. Insisting that any such changes be technically and legally justified with adequate provision for citizen input and unbiased decisionmaking. Developing better enforcement of legal restrictions. Monitoring the air quality impacts of burning.

5. Better communication between the growers and the City. Reduction in the political acrimony and extremism that have characterized this dispute in the past.

6. Encouragement of alternative methods to open burning and alternative crops to grass seed.

These goals have been partially attained. It is now clear that federal law in this area controls state legislative whim. For the first time, state officials have conceded that the restrictions in the Clean Air Act primarily control their regulation of open burning as opposed to the burning levels set by the state legislature.

Largely at Eugene and EPA'a insistence, recalcitrant growers and state air quality officials have implemented new rules which control the place and manner of open burning. These

regulations include: disallowance of burning upwind of the City of Eugene; requiring the use of alternative ignition techniques and moisture content restrictions which reduce the amount of particulate emissions; and mandating the use of an acreage release system which allows increased burning only if certain air quality criteria have been met.

And finally, our insistence upon proper process and objective justification for increased burning has found favor with EPA. EPA has now twice rejected Oregon's request to increase the amount of allowable acreage from 50,000 to 180,000 acres. The most recent rejection requires scientific justification that increased burning will not seriously harm our residents. Both rejections have admonished the state to follow proper procedures in making such a change (i.e., proper and timely notice of the state hearings on these changes in the state clean air plan is required). EPA has formally notified the State of Oregon on two occasions in the past two years that its field burning actions have violated federal law.

C. The Present Status

There now exists a disturbing erosion of some of these gains. Attainment of some other major objectives may also be thwarted. These problems include:

1. Relaxation of the rules implemented during the 1978 burning season. The State, in its proposed rules for this

season as well as proposed changes to the state implementation plan, intends to loosen previously adopted moisture content rules, allow upwind burning from the City of Eugene, and eliminate the requirement of striplighting (which decreases emissions) in favor of perimeter lighting (which increases such emissions).

2. Increase in the amount of allowable acreage burn. SB 472, recently enacted, increases the maximum burn for 1980 and beyond, to 250,000 acres. In the past the DEQ has resisted any rule changes which would have the effect of reducing the amount of acres to be burned as contrary to their legislative mandate. The new legislation hampers the implementation of reasonable rules for the future and undercuts grower incentives for alternatives.

3. Lack of dialogue between the City and the growers. As of June, 1978, because of negotiations between representatives of Eugene and the Oregon Seed Council, it was felt that an uneasy truce was made. Further attempts at discussions of new proposals were rebuffed by the growers. And it is no secret that these discussions were rejected in favor of political battle within the Legislature. The growers are now resurrecting old arguments which impune the motives of the City in this controversy, and inaccurately claim that their survival requires increased burning and that no alternatives exist. They are being represented by lobbyists who reject compromise and fail to communicate our concerns to their constituency.

4. Exacerbation of the air quality problems of east Valley communities. By the rules which divert smoke from Eugene, there has been an increase in the air quality problems in cities such as Lebanon, Sweet Home, and Harrisburg.

5. Abandonment of proper process. Governor Atiyeh proposes to suspend federal restrictions on burning to allow 180,000 acres to be burned this year. We do not believe that the conditions exist which permit such action.

The Governor's order, however, may offer Eugene a chance to obtain badly needed rules and state action. As we understand it, implementation of the suspension order will be by rule adoption by EQC. These rules will detail the permitted practices under the Governor's order for the 1979 season. At the same time, the State will be developing field burning rules for submission to EPA as part of the state clean air plan. It is thus timely for Eugene to submit a compromise plan which would adequately protect the health of Eugeneans, encourage alternatives to open burning, increase incentives to the growers to prevent smoke intrusions, and allow that level of burning claimed by the seed industry as necessary to its economic survival.

D. Proposed Compromise

Rules should be enacted under the Governor's order, as well as part of the SIP revision submitted which:

1. Allow 180,000 or more acres of burning but under stringent rules which would allow a "clean burn". These include requiring striplighting on all annual grass seed crops, perimeter burning for perennial crops, responsible moisture content rules, and rules on priority burning which protect the East Valley communities.

2. Creation of an incentive system to assure minimizing smoke intrusions into Eugene, Springfield, and the East Valley cities. Under this system, if severe intrusions occur early in the season, there would be greater restrictions placed on the manner and time that fields could be burned. In other words, if a certain level and intensity of intrusions occur, there would be more restrictive moisture content, mixing height, and priority acreage regulations, applied to the remainder of the burn. Given certain severe intrusions, some of these more restrictive conditions would carry over into the next burning season. As a practical matter, these further restrictions would reduce the number of acres which could be burned. The operation of this system would also render irrelevant the original acreage authorization because only a certain amount of acres could be burned under progressively more severe regimes. If, however, there are no or new intrusions, as much burning as practicable could occur, including burning of greater than 180,000 acres. This system would eliminate the biannual argument over acreage, and could be operated under the present smoke management system.

3. Strict policing of field burning rules. For this system to work, the restrictions must be strictly applied. Each year there may be 30,000 to 40,000 acres burned illegally. Compliance should be mandated by better vigilence and increased penalties for unlawful burning. Such penalties (as required by the Clean Air Act) should capture all economic profit made by the excess burn.

4. Such rule changes should be codified and submitted as amendments to the State Implementation Plan for EPA approval.

5. In addition to these operational rule changes, intensive research should begin on the health effects of open burning as well as funding provided for encouragement of straw utilization projects. State subsidies for the planting of alternative crops, reduction of tariffs or charges for trucks carrying straw, and state purchase and rental of burning or suction machines should be expeditiously pursued.

E. Requested Authorization

Council authorization is requested to develop these proposals into a rule packet to be presented to the Environmental Quality Commission as implementation of the suspension order. At the same time, it should be emphasized that Eugene regards the suspension as unlawful but chooses to refrain from suit if there is substantial acceptance of this proposal.

If rejected, and if the adopted rules contain scant protection for Eugene, there remains the option of overturning

the suspension order in state or federal court. Such an option would return the 50,000 acre limitation in place. While such a move would be disagreeable in certain aspects, it would force market changes which would necessitate development of alternatives to burning and the planting of grass seed and thus accomplish our objectives in that regard. Council confirmation of authorization for this litigation even against the Governor is requested in advance because of the speed in which events are occurring.

F. Conclusion

Apparent changes in attitude on the part of the EPA over the last few days in response to the impending intervention by the Governor, has placed Eugene at a crossroads. There are policy choices to be made because of a number of events. First, the EPA indicated it would not assist in enforcing the present law. This action bolsters the opinion of some involved with clean air matters that the EPA is not a serious enforcement agency, at least with respect to open field burning. It is true that the first EPA indication was that it would approve the state's requested SIP relaxation. After our presentation to the EPA in opposition to the relaxation, the EPA said it would give thoughtful consideration to our contentions. Thereafter, the EPA signalled it would be rejecting the state's relaxation on procedural and technical grounds. It was clear to those involved that approval of the SIP would have provoked a

legal challenge by Eugene. Formal rejection of the SIP meant 50,000 acres for this year's burn, and perhaps for some time to come. Because of the language of the Clean Air Act, either acceptance or rejection of the SIP revision would have foreclosed any gubernatorial action. Instead of taking either course, EPA acted in an inexplicable manner. Although it did not approve the SIP, it did not reject it. This set the stage for the Governor to claim the right to suspend the existing SIP. Initial inquiries into the EPA had indicated that EPA's interpretation of the Act was consistent with ours, and that such action was not possible. There was also a suggestion that if such unprecedented action were taken, it might be met with an express EPA disapproval. These early indications from the EPA were summarily abandoned, and we've been told, without reason or explanation, that the EPA does not intend to interpret or enforce the federal law in a way that would prevent the state from facilitating smoke intrusions in Eugene this season.

Nevertheless, the Governor has been very explicit in stating that although he intends to permit field burning to occur he wants to do everything he can to limit the effect of burning in Eugene. The Governor's response to our suggestions was very cooperative and he seemed to respond favorably to any reasonable attempt to prevent a deterioration in Eugene's airshed. He made some specific suggestions himself which could prove to be very constructive and, his philosophy towards enforcement seemed markedly preferable to what we've experienced

in the past.

When the Governor acts by executive order, it should be his intentions which guide the EQC in providing for strict regulation of burning by the best available methods. If the EQC were to approach and decide questions in accordance with the Governor's stated intentions and suggestions as to this year and as to the re-write of the State Implementation Plan revision request, Eugene could achieve many of its objectives.

We recommend waiting to see if the Governor's stated intentions are implemented by specific strict controls over burning for this and the next few years. If they are, the issue of field burning can be set aside for awhile. If we have misunderstood the Governor's intentions, or if the EQC cannot or will not respond, the courts and the EPA at a national level are available.

If you have any questions, please do not hesitate to inquire.

Very truly yours,

A. Keith Martin, Ass't City Manager

Stanton F. Long, City Attorney

Timothy J. Sercombe, Ass't City Attorney

Terry Smith, City Environmental Analyst

jlb

By letters of May 18, 1979, and June 19, 1979, you were notified that the City of Eugene intended to commence an action under the Clean Air Act, Section 304, unless appropriate action was taken to cure the violation of the Act cited therein. As you are aware, the current Oregon State Implementation Plan limits the number of permits for open agricultural burning during the 1979 burning season to 50,000 acres. See 42 Fed. Reg. 20, 131 (1977) (incorporating the provisions of OR laws 1975, Ch. 559). The fee for such permits by the terms of the SIP is $8.

It is our understanding that contrary to the terms of the SIP, permits for the burning of 198,000 have already been issued this year and that a lesser fee was charged for each permit. Each grower's allocated acreage has been set on the premise that 180,000 acres is the appropriate ceiling. We suspect that you assume that the Environmental Protection Agency will approve the pending SIP provisions which allows the issuance of a greater number of permits. We believe that EPA approval will not be forthcoming because of sustantive and procedural difficulties with the provision. In any event, approval if it occurs, may not be an unconditional, final, formal act of the EPA until after the end of this year's burning season.

For the previous four burning seasons (1975, 1976, 1977, and 1978), the EQC has issued burning permits in excess of the applicable SIP limitation. Last year, a formal notice of violation was given to the State of Oregon by the EPA for the excess permits issued in 1977. Your actions in issuing more permits than the SIP allowed indicate that violations will occur again this year.

This letter is to formally request that you convene an emergency telephone meeting of the EQC (as provided for under ORS 192.670) to consider the appropriate level of field burning until final agency action by the EPA on the SIP provision request. It is the number of permits issued by the state that is regulated by the SIP, and you have the duty to adhere to the SIP. Thus, we ask that the EQC obey the present law and direct the Department of Environmental Quality director to rescind all permits above 50,000 acres and to reallocate that acreage among those farmers who have registered fields for burning. This order to the DEQ would allow the reissuance of the present permits only if a formal and final EPA approval of a revision request occurs.

The law is clear. The Clean Air Act, Section 116, 42 USC Section 7416, provides that:

> ... if an emission standard or limitation is in effect under an applicable implementation plan...Section A, state or political subdivision may not adopt or enforce any emission standard or or limitation which is less stringent than the standard or limitation under such plan or section.

Likewise, CAA Section 110(h) provides that a state may not change a plan except by approved revision. See Air Pollution Variance Ford vs. Western Alfalfa, 416 US 861, 863 (1974); St. Joe Minerals Corp. vs. EPA, 508 F. 2d 743, 748 (3rd Circuit 1975). See also Criteria for Proposing Approval of Revisions to Plans for Non-Attainment Areas, 43 Fed. Reg. 21673, 21674 (1978).

The present obligation of the EQC has been formalized by the opinions of the Attorney General. 38 Op. Atty. Gen. 1736, 1738-39 (1978); 38 Op. Atty. Gen. 1901, 1904 (1978). In the latter opinion, the Attorney General holds that:

> Thus, action by the state to permit field burning in excess of the acreage specified in the Oregion SIP would continue the state in violation of the CAA. If the state cannot obtain EPA approval of a revised plan permitting burning of 180,000 acreas specified in ORS 468.475, Section 2, Subsection (b), ~~and~~ provisions of the plan as presently approved clearly prevail. The mandate of ORS 468.475 (2) and (5) would be nullified, preempted by limitations set forth in SIP, and the state would have no authority to permit burning of more than 50,000 acreas in 1978, such preemption would arise as a supremacy clause of the United States Constitution which provides:
>
> > This Constitution and the Bylaws of the United States which shall be made in pursuance thereof; shall be the supreme law of the land; and the judges in every state shall be bound thereby, and any thing in the Constitution or laws of any state to the contrary notwithstanding. U. S. Constitution, Article 6, Clause 2.
>
> We point out that the EQC has an obligation to do its utmost to comply with both ORS 468.475 and the state implementation plan....However, until the EQC does in fact receive approval from the EPA to burn in excess of 50,000 acres specified in the SIP as presently approved, EQC is subject to the limits set out in that plan, notwithstanding the directive of ORS 468.475.
>
> ...We reiterate that the SIP as presently approved sets the limits which EQC must follow in issuing field burning permits. That limit is presently 50,000 acres. Therefore, until EQC receives approval from EPA to raise that limit, EQC may not authorize burning of more than 50,000 acres.

If you refuse to give assurance that you will comply with SIP, we will take appropriate legal action. It is our belief and hope that your future actions will conform to law. Moreover, we hope you will act fairly and inform all concerned of how your agency intends to respond to this situation. Because you have authorized burning last week upon illegal permits, we must act promptly. We intend to commence action to require you to obey the law of July 17, 1979, and request a decision from you prior to that date which will obviate the need for legal action.

Very truly yours,

JOHNSON, HARRANG & MERCER

/s/ Stanton F. Long

jas

NORTHWEST
LEGAL
ADVOCATES
A NON-PROFIT PUBLIC INTEREST LAW FIRM
795 WILLAMETTE STREET SUITE 216 EUGENE, OREGON 97401 (503) 485 5222

DOUGLAS C BAYERN ATTORNEY
KAREN M HOLT ATTORNEY
SUSAN ROBERTSON PEASE ATTORNEY
ROBERT A TAYLOR ATTORNEY

July 17, 1979

Clark Gaulding, Chief
Air Branch
EPA - Region X
1200 Sixth Avenue
Seattle, Washington 98101

Re: Proposed Revision of Oregon SIP

Dear Mr. Gaulding:

In inquiring of EPA staff members as to the procedure involved in SIP revisions, we have been dismayed to discover a procedural aspect of the revision process which we believe to be in error. That aspect concerns the question of who is to bear the burden of proving many of the factual issues involved. The information we have received suggests that the EPA will be placing the burden on SIP revision challengers to disprove the validity of whatever data is presented, rather than requiring the DEQ to prove the appropriateness of its actions.

The adoption by Congress of the 1977 Amendments to the Clean Air Act was a remedial measure aimed at correcting the flaws and abuses of the program created by the 1970 Act. By modifying, and in cases strengthening, the regulatory programs of the Agency designed to plug the statutory loopholes (such as the PSD program and the program for nonattainment areas) Congress evidenced a strong intention to immediately regulate air pollution sources and to set strict timetables for the improvement and maintenance of air quality. As with all remedial legislation, those attempting to exempt themselves from it restrictions must carry a heavy burden of proof.

Oregon's proposed SIP revision includes a request for redesignation of the Eugene-Springfield AQMA from nonattainment to attainment for the primary TSP standard. Supporting that request is an incomplete list of monitor readings from a several year period. Because a redesignation is both a change of the regulatory status quo and an attempt to exempt the AQMA from the immediate restrictions of part D of the Act, the DEQ must bear a heavy burden of proof and any flaws or deficiencies in the data submitted must weigh against the state and against redesignation. Besides being insufficient, the data submitted by the DEQ is improperly based on

the use of dispersion techniques. However, we have gathered from statements by the EPA that the data submitted by the DEQ will be accepted and that it is up to those who question its validity to prove that it is insufficient. This allocation of the burden of proof is highly improper and draws into question the entire decision-making process involved in determining whether or not to approve a SIP revision. The EPA has an obligation to examine all data submitted with a highly critical eye and to require the DEQ to present an unassailable factual case for the exemption of the AQMA from the immediate effect of Part D controls. With the burden of proof properly placed, the DEQ data does not support the redesignation request.

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cc: William H. Young, DEQ
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