

MINUTES OF THE House COMMITTEE ON Agriculture and LivestockThe meeting was called to order by the Chairman, Bill Fuller at  
Chairperson9:00 a.m./~~p.m.~~ on February 21, 1984 in room 423-S of the Capitol.

All members were present except: Representatives Rezac and Solbach, who were excused.

## Committee staff present:

Raney Gilliland, Legislative Research Department  
Norman Furse, Revisor of Statutes Office  
Kathleen Moss, Committee Secretary

## Conferees appearing before the committee:

John Severe, Kansas Grain and Feed Dealers  
Nancy Kantola, Kansas Cooperative Council  
John Blythe, Kansas Farm Bureau  
Barbara Sabol, Secretary, Department of Health and Environment  
Ray Buergin

The meeting was called to order by the Chairman. He announced hearings on HB 2990 and HCR 5078, which are an outgrowth of hearings held on January 30 and 31 regarding air quality standards and permit fees.

Staff reviewed HB 2990, which amends the present statutes. The amendatory language begins on Page 2, Line 66. HCR 5078 modifies the administrative regulations, and beginning on Line 41, gives class numbers that determine the amount of the permit fees. It also eliminates the fees mentioned in the bill.

John Severe, Kansas Grain and Feed Dealers Association, appeared in support of both proposals. He distributed a prepared statement and copies of pages from the Federal Register. (See Attachment 1.)

Nancy Kantola, Kansas Cooperative Council, testified in support of both proposals. She said they do not oppose warehouse inspections, and audit checks because they are accustomed to inspections and fees, but she feels the fees are out of proportion and that they are not getting enough benefit for their money.

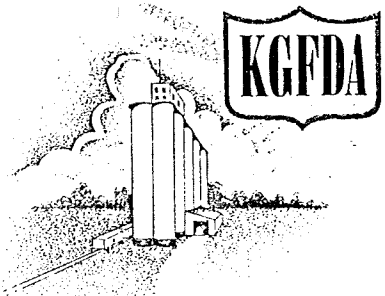
John Blythe, Kansas Farm Bureau, distributed a policy statement and said they support both the bill and the resolution.

Barbara Sabol, Secretary, Department of Health and Environment, told the Committee that her agency implements the direction of the legislature, and appeared to answer questions. The questions centered around the fee structure and the proportion of fees paid by the grain industry. Mrs. Sabol said she had prepared a memo for staff, and read portions of it to the Committee. She said that the agency charge is about \$30.00 for inspections, and about \$25.00 for staff review.

Mrs. Sabol introduced Ray Buergin from her staff, to answer questions. There were questions concerning the classification of various industries and how the amount of pollution is determined.

The Chairman told the Committee that it should consider the fiscal responsibility of the businesses involved; the condition of the state general fund, the type of emissions and the type of emissions.

The meeting was adjourned at 9:53 A.M. The next meeting is scheduled for Wednesday, February 22, 1984, 9:00 A.M., Room 423-S.



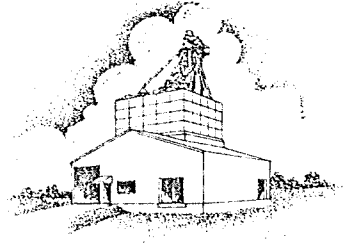
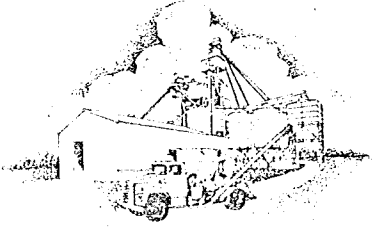
KANSAS GRAIN & FEED DEALERS *Association*

1722 NORTH PLUM / A/C 316 662-7911 / HUTCHINSON, KANSAS 67501

STATEMENT OF THE  
KANSAS GRAIN AND FEED DEALERS ASSOCIATION  
TO THE  
HOUSE AGRICULTURE AND LIVESTOCK COMMITTEE  
REPRESENTATIVE BILL FULLER, CHAIRMAN  
RELATIVE TO  
HOUSE CONCURRENT RESOLUTION NO. 5078 AND HOUSE BILL NO. 2990  
PRESENTED BY  
JOHN G. SEVERE  
DIRECTOR OF MEMBER SERVICES  
FEBRUARY 21, 1984

Chairman Fuller and members of the House Ag Committee, my name is John Severe and I am here today representing the Kansas Grain and Feed Dealers Association. The membership of the Kansas Grain and Feed Dealers Association is comprised of roughly 1,000 grain facilities who, I would like to state at the onset, are in support of House Bill No. 2990 and House Concurrent Resolution No. 5078.

In order to avoid a rehash of information presented in earlier testimonies concerning our Association's dissatisfaction with the Bureau of Air Quality's proposed permit fees and fee schedule system, I will only recount briefly some of the major arguments presented by myself, members of our Association and our Association's



Executive Vice President Tom R. Tunnell. Those arguments were:

- 1) The grain and feed industry has spent countless dollars in efforts to install, improve and upgrade dust control systems. These dollars were spent both as a response to regulations imposed by EPA (via the Department of Health and Environment's Bureau of Air Quality), the U. S. Department of Labor's Occupational Safety and Health Administration, and insurance companies that underwrite the property and casualty needs of our industry.
- 2) The grain and feed industry is of the opinion that the efforts of the Bureau of Air Quality are a duplication of efforts already conducted by United State's Department of Labor's Occupational Safety and Health Administration and the aforementioned insurance companies.
- 3) The fees as proposed are excessive. The Kansas grain industry believes the services of the Bureau of Air Quality, if indeed a duplication of other efforts, greatly exceed their value to our industry. Essentially, we do not receive \$130,000 of benefit from the Bureau's inspections. Moreover, \$130,000 is 37% of what the Bureau has historically received from the State's general fund and this is far too great a percentage for one single industry to pay in providing the Department's funds.
- 4) The grain and feed industry is and always has been in compliance with the provisions of the Clean Air Act as administered by our State's Bureau of Air Quality and, what's more, the Department of Health and Environment's required emissions levels are ten times more stringent than those held by EPA at the Federal level.
- 5) The grain and feed industry, while playing a major role in the economics of agriculture, is already heavily burdened by costs of doing business - administrative costs, licensing costs, bonding costs, insurance costs, tax costs, etc. These fees amount to one more cost, one more burden, that the industry and therein the agricultural community must bear. (I don't believe we need to argue

the fact that the agricultural community, not only in Kansas but across the nation, is already suffering considerable economic strife.)

I have provided members of the Committee, along with this testimony, copies of the most recent grain elevator safety standards published by the Occupational Safety and Health Administration. I have also taken the liberty of highlighting those portions of OSHA's safety standards that pertain to emissions and emissions control.

If adopted, these regulations will have a dramatic impact upon the grain and feed industry, particularly, in two ways: First, they are going to establish emission control levels; and, second, they will cost the industry anywhere from \$750 million to \$6 billion.

Members of this Committee have stated that agricultural emissions, in that they are non-toxic, should not be a special concern to the public and its health. This Committee, even in discussion of House Bill No. 2990 and House Concurrent Resolution No. 5078, is indicating today that the Bureau of Air Quality's inspections of the grain and feed industry and other agricultural related businesses are possibly unnecessary.

Whether necessary or not, what KGFDA is trying to establish today with the materials provided is the fact that because the services of the Bureau of Air Quality are already maintained and executed by other branches of government we see them as redundant. Of course, in certain industries more hazardous, technical, or dangerous this system of redundant checks and balances, in terms of inspections, is often seen as very beneficial because it is believed ever so important; yet, the dust emissions of the agricultural industry are non-toxic and therefore not so hazardous as to merit subjection to the tests of redundancy.

We support House Bill No. 2990 and House Concurrent Resolution No. 5078 because we are opposed to paying fees that support an activity that is certainly a repeat of other similar activities carried out by separate organizations and branches of government. To the grain and feed industry, these inspections exceed what is needed or indispensable.

Thank you for your attention.

# # # # #

them to new hazards. Current employees, and new employees prior to starting work, shall be trained in at least the following:

(i) Recognition of and preventive measures for the safety hazards associated with their work tasks;

(ii) procedures and safety practices established by the employer including where applicable, but not limited to, clearing procedures for choked legs, housekeeping program procedures, hot work procedures, preventive maintenance program procedures, rules pertaining to smoking and other common ignition sources, and lock-out/tag-out procedures.

(2) The employer shall assure that employees assigned special tasks such as bin entry and handling of flammable, or toxic substances, are provided training to handle safely these materials and work tasks.

(f) *Permit system.* (1) The employer shall develop and implement a permit system for hot work, except for hot work performed in welding shops authorized by the employer, and for work requiring entry into bins, silos, and tanks.

(2) The permit shall be the written certification by the employer authorizing employees to perform identified work operations subject to at least the following precautions:

(i) Hot work operations must meet the requirements contained in § 1910.252(d);

(ii) Entry into bins, silos, and tanks must meet the requirements contained in paragraph (g) of this section.

(g) *Entry into bins, silos, and tanks.*

(1) The employer shall assure that the following precautions have been taken before employees enter bins, silos, and tanks:

(i) Mechanical and electrical equipment which present a danger to employees inside bins, silos, or tanks, shall be disconnected or locked out and tagged.

(ii) The atmosphere within a bin, silo, or tank shall be tested for the presence of combustible gases, vapors, and toxic agents when there is reason to believe they may be present. Additionally, the atmosphere within a bin, silo, or tank, shall be tested for oxygen content unless there is continuous natural air movement or continuous forced-air ventilation before and during the period the employee(s) are inside.

(iii) If the oxygen level is less than 19.5% or if combustible gas or vapor is detected in excess of 10% of the lower flammable limit, or if toxic agents are present in excess of the ceiling levels listed in Subpart Z of this Part, or if toxic agents are present in concentrations that will cause acute debilitating health effects, the following provisions apply.

(A) Ventilation shall be provided until the unsafe condition or conditions are eliminated, and the ventilation shall be continued as long as there is a possibility of recurrence of the unsafe condition while the bin, silo, or tank is occupied by employees.

(B) If toxic conditions cannot be eliminated by ventilation, the employer shall assure that any employee entering a bin, silo, or tank wears an appropriate respirator. Respirator use shall be in accordance with the requirements of § 1910.134.

(2) The employer shall assure that employees wear a body harness with lifeline, or that a boatswain's chair meeting the requirements of Subpart D of this Part is used, when employees enter bins, silos, or tanks from the top.

(3) The employer shall assure that an observer, equipped to provide assistance, is stationed outside the bin, silo, or tank being entered by an employee. Communications (visual, voice, or signal line) shall be maintained between the observer and employee entering the bin, silo, or tank.

(4) The employer shall assure that equipment is provided for rescue operations which is specifically suited for the bin, silo or tank being entered.

(5) The employee acting as observer shall be trained in rescue procedures including notification methods for obtaining additional assistance.

(6) The employer shall assure that an employee trained in cardio-pulmonary resuscitation is available to provide assistance.

(7) Employees shall not be permitted to enter bins, silos, or tanks underneath a bridging condition or a buildup of grain or grain products on the side which could bury them.

(h) *Contractors.* (1) The employer shall inform contractors performing work at the facility of any potential fire and explosion hazards. The employer shall also inform contractors of the applicable safety rules of the facility.

(2) The employer shall explain the applicable provisions of the facility emergency action plan to contractors.

(i) *Housekeeping.* (1) The employer shall develop and implement a housekeeping program consisting of a dust control and removal method or combination of methods which will minimize fugitive grain dust accumulations inside grain handling facilities on ledges, floors, equipment, and other exposed surfaces.

(2) Effective July 1, 1985, all grain handling facilities except small elevator facilities shall be required to implement one of the three following alternatives as part of the employer's housekeeping program; effective July 1, 1988, the

following requirements shall also apply to small elevator facilities:

(i) *Action level.* (A) The employer shall establish an action level not to exceed a  $\frac{1}{8}$ " layer of fugitive dust averaged over a 200 square foot floor area.

(B) If fugitive grain dust accumulations exceed the  $\frac{1}{8}$ " level specified in paragraph (i)(2)(i) of this section, designated means or methods shall be initiated to remove immediately such accumulations to a safe location; or

(ii) *Once per shift cleaning.* The employer's housekeeping program shall ensure the removal of hazardous accumulations of dust. In setting up such a housekeeping program, the employer shall:

(A) Establish and implement a schedule of no less than once per shift for cleaning the workplace of dust, when the facility is in operation,

(B) Set out procedures for cleaning and disposal of the dust and what equipment is to be used,

(C) Alert employees as to where this equipment is stored, and train these employees in the use of the equipment,

(D) Maintain the equipment so that it is functional and operational; or

(iii) *Pneumatic dust control system.* The employer shall install and maintain in its facility a pneumatic dust control system, covering dust emission points from its stock handling system, such that there are no visible dust emissions coming from the stock handling system.

(3) The use of compressed air or other means to blow dust from ledges, walls, and other areas which may create a dust explosion hazard (i.e., result in dust concentrations above the lower explosive limit), shall only be permitted when all machinery that present an ignition source in the area is shut-down, and all other sources of ignition are removed.

(4) Grain or product spills shall not be considered fugitive grain dust accumulations. However, the housekeeping program shall address the procedures for removing such spills from the work area.

(j) *Grate openings.* The employer shall assure that receiving-pit feed openings, such as truck or railcar receiving pits, are covered by grates. The length and width of openings in the grates shall be a maximum of two and one-half inches (6.35 cm). If the required grate openings are too restrictive for an adequate flow of grain through the grating, larger openings in grates are permissible where magnets are used to remove ferrous material from the grain stream.

(k) *Filter collectors.* (1) Effective January 1, 1985, the employer shall equip

all fabric dust filter collectors, which are a part of a pneumatic dust collection system, with a monitoring device that indicates when the filter becomes blinded. Such indication shall be observable at a designated inspection or work location.

(2) Filter collectors installed after the effective date of this standard shall be:

- (i) Located outside the facility; or
- (ii) Located in an area inside the facility protected by a fire or explosion suppression system; or
- (iii) Located in an area inside the facility provided with explosion venting to the outside and separated from other areas of the facility by construction having at least a one hour fire-resistance rating.

(1) *Preventive maintenance.* (1) The employer shall develop and implement a preventive maintenance program consisting of:

- (i) Regularly scheduled inspection of at least the mechanical and safety control equipment associated with dryers, removal of ferrous objects, dust collection systems including filter collectors, and grain elevator legs; and,
- (ii) Lubrication and other appropriate preventive maintenance of the equipment to assure continued, safe operation.

(2) The employer shall promptly correct the following conditions: overheated bearings and slipping or misaligned belts that are associated with inside bucket elevators, and blinded filter collectors.

(3) The employer shall implement a system for identifying the date, maintenance performed and/or results of the equipment inspection.

(4) The employer shall develop and implement procedures consisting of tags and locks which will prevent the inadvertent application of energy or motion to equipment being repaired, serviced, or adjusted, which could result in employee injury. Such locks and tags shall be removed in accordance with established procedures only by the employee installing them or, if unavailable, by his or her supervisor.

(m) *Grain stream processing equipment.* The employer shall assure that grain stream processing equipment (such as hammer mills, grinders, and pulverizers) is equipped with an effective means of removing ferrous material from the incoming grain stream.

(n) *Emergency escape.* (1) The employer shall provide at least two means of escape from tunnels, galleries, scale floors, and work areas normally occupied by employees.

(2) The employer shall assure that escape routes are separated from each other to the extent that a single event,

such as a fire, will not reasonably prevent access to all means of escape.

(o) *Bulk raw grain dryers.* (1) Effective July 1, 1985, the employer shall assure that all direct-heat grain dryers are equipped with automatic controls that:

- (i) Will shut-off the fuel supply in case of power or flame failure or interruption of air movement through the exhaust fan; and,
- (ii) Will stop the grain from being fed into the dryer if the grain discharge mechanism becomes clogged, or excessive temperature occurs in the exhaust of the drying section.

(2) Direct-heat grain dryers installed after the effective date of this standard shall be:

- (i) Located outside the facility; or
- (ii) Located in an area inside the facility protected by a fire or explosion suppression system; or
- (iii) Located in an area inside the facility which is separated from other areas of the facility by construction having at least a one hour fire-resistance rating.

(p) *Inside bucket elevators.* (1) The employer shall assure that elevator legs are not jogged to free a choked leg.

(2) Effective January 1, 1985, the employer shall assure that elevator legs are electrically grounded.

(3) The employer shall assure that belts and lagging installed after January 1, 1985, are conductive. Belts shall have a surface electrical resistance not to exceed 300 megohms.

(4) Effective July 1, 1985, the employer shall assure that inspection doors are provided in the head pulley section to allow inspection of the head pulley lagging, belt, and discharge throat of the elevator leg. Boot sections shall be provided with doors for cleanout of the boot and for inspection of the boot pulley and belt.

(5) Effective July 1, 1985, the employer shall equip elevator legs with a motion detection device which initiates an alarm to employees when belt speed is reduced by no more than 15% of the normal operating speed and which will shut-down the leg when the belt speed is reduced by no more than 20% of the normal operating speed. Conveyor equipment which feeds the leg shall be equipped with interlock to shut-down these conveyors in the event that the leg they are serving is shut-down.

(6) Effective July 1, 1985, the employer shall assure that:

- (i) Bearings are mounted externally to the leg casing; or
- (ii) Bearings mounted totally or partially inside leg casings are equipped with a temperature monitoring device which can be read at a designated inspection or work location.

(7) Effective January 1, 1986, the employer shall equip elevator legs with a belt alignment monitoring device which will initiate an alarm to employees when the belt is not tracking properly.

(8) The employer does not have to comply with paragraphs (p)(5), (p)(3), and (p)(7) of this section where:

(i) Bucket elevators are equipped with an operational fire and explosion suppression system capable of protecting at least the head and boot section of the leg; or

(ii) Bucket elevators are equipped with pneumatic or other dust control systems that keeps the dust concentration inside the leg casing below 50% of the lower explosive limit at all times during operations.

(q) *Partially-inside bucket elevators.*

(1) All partially-inside bucket elevators shall comply with the requirements of paragraphs (p)(1) and (p)(5) of this section.

(2) When partially-inside bucket elevators meet the requirements of paragraph (p)(8)(i) or (p)(8)(ii) of this section, the employer does not have to comply with the requirements of (p)(5) of this section.

**Note.**—The following appendices to § 1910.272 serve as nonmandatory guidelines to assist employers and employees in complying with the requirements of this section in Subpart R, as well as to provide other helpful information.

#### Appendix A to § 1910.272 Grain handling facilities

1. *Scope.* The standard contains requirements for new and existing grain handling facilities in both general industry and maritime employments. Country, inland terminal, and export grain elevators are covered by this standard, as well as dust pelletizing plants and certain grain processing plants.

2. *Application.* All grain elevator facilities including those elevators that are a part of a mill must comply with all of the requirements contained in the standard including paragraphs (p) and (q) if appropriate. The standard does not apply to seed plants which handle and prepare seeds for planting of future crops.

3. *Emergency action plan.* The standard requires the employer to develop and implement an emergency action plan. There is an appendix to § 1910.38(a) which employers should review since it contains information that will be helpful in developing emergency action plans for grain handling facilities.

The emergency action plan (§ 1910.38(a)) covers those designated actions employers and employees are to take to ensure employee safety from fire and other emergencies. The plan specifies certain minimum elements which are to be addressed. These elements include the establishment of an employee alarm system,

and receiving areas which are located outside the facility need not be addressed in the housekeeping program. Additionally, truck dumps which are open on two or more sides need not be addressed by the housekeeping program. Other truck dumps should be addressed in the housekeeping program to the extent that provision is made for regular cleaning during periods of receiving grain or agricultural products. The housekeeping program should provide coverage for all workspaces in the facility, including walls, beams, etc., especially in relation to the extent that fugitive dust could accumulate.

**8A. Dust accumulations.** Almost all facilities will require some level of manual housekeeping. Manual housekeeping methods, such as vacuuming or sweeping with soft bristle brooms, should be used which will minimize the possibility of layered dust being suspended in the air when it is being removed.

The housekeeping program should include a contingency plan to respond to situations where dust accumulates rapidly due to a failure of a dust enclosure hood, an unexpected breakdown of the dust control system, a dust-tight connection inadvertently knocked open, etc.

One of the alternatives for dust control is to specify an action level to cleanup and safely dispose of dust or otherwise control the condition. The standard specifies a maximum accumulation of  $\frac{1}{8}$  inch of dust, averaged over a 200 square foot area, as the upper limit for the action level. Any accumulation in excess of this amount and area, and where no action has been taken to implement cleaning, would constitute a violation of the standard. Employers should make every effort to minimize dust accumulations on exposed surfaces since dust is the fuel for a fire or explosion, and it is recognized that a  $\frac{1}{8}$  inch dust accumulation is more than enough to fuel such occurrences.

The housekeeping program should also specify the manner of handling grain or product spills, and the methods to be used for returning the grain or product back into the stock handling system. Grain and product spills are not considered to be fugitive dust accumulations.

A fully enclosed horizontal belt conveying system where the return belt is inside the enclosure should have inspection doors to permit checking of equipment, checking for dust accumulations and facilitate cleaning if needed.

**8B. Dust emissions.** Each employer needs to analyze the entire stock handling system to determine the location of dust emissions and effective methods to control or to eliminate them. The employer should make sure the holes in spouting, casings of bucket elevators, pneumatic conveying pipes, screw augers, or drag conveyor casings, are patched or otherwise properly repaired. Minimizing free falls of grain or grain products by using choke feeding techniques, and utilization of dust-tight enclosures at transfer points, can be effective in reducing dust emissions.

Each housekeeping program should specify the schedules and control measures which will be used to control dust emitted from the

stock handling system. The housekeeping program should address the schedules to be used for cleaning dust accumulations from motors, critical bearings and other potential ignition sources in the working areas. Also, the areas around bucket elevator legs, milling machinery and similar equipment should be given priority in the cleaning schedule. The method of disposal of the dust which is swept or vacuumed should also be planned.

Dust may accumulate in somewhat inaccessible areas, such as those areas where ladders or scaffolds might be necessary to reach them. The employer may want to consider the use of compressed air and long lances to blow down these areas frequently. The employer may also want to consider the periodic use of water and hoses to wash down these areas. If these methods are used, they are to be specified in the housekeeping program along with the appropriate safety precautions, including the use of personal protective equipment such as eyewear and dust respirators.

Several methods have been effective in controlling dust emissions. The most widely used method of controlling dust emissions is a pneumatic dust collection system. However, the installation of a poorly designed pneumatic dust collection system has fostered a false sense of security and has often led to an inappropriate reduction in manual housekeeping. Therefore, it is imperative that the system be designed properly and installed by a competent contractor. Those employers who have a pneumatic dust control system that is not working up to expectations should request the engineering design firm, or the manufacturer of the filter and related equipment, to conduct an evaluation of the system to determine the corrections necessary for proper operation of the system. If the design firm or manufacturer of the equipment is not known, employers should contact their trade association for recommendations of those competent designers of pneumatic dust control systems who could provide assistance.

When installing a new or upgraded pneumatic control system, the employer should insist on an acceptance test period of 30 to 45 days of operation to ensure that the system is operating as intended and designed. The employer should also obtain maintenance, testing, and inspection information from the manufacturer to ensure that the system will continue to operate as designed.

If the employer intends to return collected dust to the stock handling system, the dust should be returned at a point downstream from where it was collection. This will avoid rehandling the same dust twice or more. It is also safer not to reintroduce the collected dust until the loadout end of the stock handling system.

Aspiration of the leg, as part of a pneumatic dust collection system, is another effective method of controlling dust emissions. Aspiration of the leg consists of a flow of air across the entire boot, which entrains the liberated dust and carries it up the leg to take-off points. With proper aspiration, dust concentrations in the leg can be lowered below the lower explosive limit.

Where a prototype leg installation has been instrumented and shown to be effective in keeping the dust level below 50% of the lower flammable limit during normal operations for the various products handled, then other legs of similar size capacity and products being handled which have the same design criteria for the air aspiration would be acceptable to OSHA, provided the prototype test report is available on site.

Another method of controlling dust emissions is enclosing the conveying system, pressurizing the general work area, and providing a lower pressure inside the enclosed conveying system. Although this method is effective in controlling dust emissions from the conveying system, adequate access to the inside of the enclosure is necessary to facilitate frequent removal of dust accumulations. This is also necessary for those systems called "self-cleaning."

The use of edible oil sprayed on or into a moving stream of grain is another method which has been used to control dust emissions. Tests performed using this method have shown that the oil treatment can reduce dust emissions. Repeated handling of the grain may necessitate additional oil treatment to prevent liberation of dust. However, before using this method, operators of grain handling facilities should be aware that the Food and Drug Administration must approve the specific oil treatment used on products for food or feed.

**9. Grates over receiving pits.** Grates are necessary to assist in the removal of foreign objects. Grate openings should be sized for the proper flow of the commodity through the grate that will prevent overflow. Those facilities which are handling ear corn or other non-free flowing commodity may need larger grate openings than the  $2\frac{1}{2}$  inch square openings specified in the standard. Larger grate openings are permitted if permanent or electromagnets are used the full width of the incoming commodity stream to remove ferrous objects. The maintenance required on the magnets is to be covered in the preventive maintenance program.

Where grate openings are larger than those needed or desired, the employer may also use an overlay grate, which can be welded or strapped to the existing grate, to achieve the desired size opening.

**10. Filter collectors.** Proper sizing of filter collectors for the pneumatic dust control system they serve is very important for the overall effectiveness of the system. The air to cloth ratio of the system should be in accordance with the manufacturer's recommendations. If higher ratios are used, it can result in more maintenance on the filter, shorter bag or sock life, increased differential pressure resulting in higher energy costs, and an increase in operational problems.

A photohelic gauge, magnetohelic gauge, or manometer, may be used to indicate the pressure rise across the inlet and outlet of the filter. When the pressure exceeds the design value for the filter, the air volume will start to drop, and maintenance will be required. Anyone of these three monitoring devices is acceptable as meeting paragraph (k)(1) of the standard.