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Part III

**Environmental
Protection Agency**

40 CFR Part 170

**Pesticide Worker Protection Standard;
Administrative Exception for Cut-Rose
Hand Harvesting; Administrative Decision;
Proposed Rule**

**Exception Decisions to Early Entry
Prohibition, Worker Protection Standard;
Technical Amendment; Final Rule**

**ENVIRONMENTAL PROTECTION
AGENCY**

40 CFR Part 170

[OPP-250121; FRL-5599-2]

RIN 2070-AC95

**Pesticide Worker Protection Standard;
Administrative Exception for Cut-Rose
Hand Harvesting**

AGENCY: Environmental Protection Agency (EPA).

ACTION: Administrative Exception Decision.

SUMMARY: With this document, EPA is announcing it has granted a limited administrative exception to the 1992 Worker Protection Standard (WPS) restrictions on early entry into pesticide-treated areas allowing workers to hand harvest roses during restricted entry intervals. Under § 170.112 (e) of the WPS, EPA may establish exceptions to the provision prohibiting early entry to perform routine hand-labor tasks. EPA is granting the exception because if the rose harvests are delayed, significant economic loss will occur; and, if the terms of this exception are followed, the contact with pesticide-treated surfaces will be minimal. The exception allows workers to enter for three hours per 24-hour period during a restricted entry interval. Thus, EPA granted this exception because it believes the benefits of this exception outweigh any resulting risks. The exception took effect on December 18, 1996, and expires on October 4, 1999.

EFFECTIVE DATE: This document is effective October 3, 1997.

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SUPPLEMENTARY INFORMATION: This Notice is issued under the authority of section 25(a) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 U.S.C. 136w(a). Under FIFRA, EPA is authorized to mitigate unreasonable adverse effects that may result from exposure to pesticides, taking into account the risks of pesticide exposure to human health and the environment and the benefits of pesticide use to society and the economy. Elsewhere in this issue of the **Federal Register**, EPA is amending

§ 170.112 of the WPS to include reference to this administrative exception and its effective date.

I. Background

A. Worker Protection Standard

Introduced in 1974, the Worker Protection Standard (WPS) is intended to reduce the risk of pesticide poisonings and injuries among agricultural workers who are exposed to pesticide residues, and to reduce the risk of pesticide poisonings and injuries among pesticide handlers who may face more hazardous levels of exposure. Updated in 1992, the WPS scope now includes workers performing hand-labor operations in fields treated with pesticides, workers in or on farms, forests, nurseries and greenhouses, and pesticide handlers who mix, load, apply, or otherwise handle pesticides. The WPS contains requirements for pesticide safety training, notification of pesticide application, use of personal protective equipment (PPE), restricted entry intervals (REI) following pesticide application, decontamination supplies, and emergency medical assistance.

B. WPS Early Entry Restrictions

The 1992 WPS includes provisions under § 170.112 prohibiting agricultural workers from entering a pesticide-treated area to perform routine hand-labor tasks during an REI. Hand labor is defined by the WPS as any agricultural activity performed by hand or with hand tools that causes a worker to have substantial contact with treated surfaces (such as plants or soil) that may contain pesticide residues. The REI is the time after the end of a pesticide application when entry into the treated area is restricted as specified on the pesticide product label.

C. WPS Exceptions to Early Entry Restrictions

Currently, the WPS only permits worker entry during the REI for the following purposes: (a) Entry resulting in no contact with treated surfaces; (b) entry allowing short-term tasks (less than 1 hour) to be performed with PPE and other protections; and (c) entry to perform tasks associated with agricultural emergencies. Under the "no contact" and "short-term task" exceptions, workers performing early-entry work are not permitted to engage in hand labor.

Under § 170.112(e) of the WPS, EPA may establish additional exceptions to the provision prohibiting early entry to perform routine hand-labor tasks. EPA grants or denies a request for an exception based on a risk-benefit

analysis as required by FIFRA. On June 10, 1994 (59 FR 30265) (FRL-4779-8), EPA granted an exception that allowed, under specified conditions, early entry into pesticide-treated areas in greenhouses to harvest cut roses. This exception expired on June 10, 1996. On May 3, 1995 (60 FR 21955, FRL-4950-4) (60 FR 21960, FRL-4950-5), two additional exceptions were granted that allow early entry to perform irrigation and limited contact tasks under specified conditions.

D. Summary of Roses Inc.'s Petition

Roses Inc., a rose grower association, approached the Agency in the spring of 1996 and expressed a need for continuing the WPS cut-rose exception. According to Roses Inc., an early-entry exception to allow the harvest of cut roses twice a day is necessary for cut-rose growers to avoid the loss of significant portions of their crop.

Roses Inc. explained that commercial quality standards demand that roses be cosmetically perfect and at a bloom stage where the bud is just beginning to open. To meet such standards, Roses Inc. noted that pesticides must be used to control insects and disease, and harvesting must occur at least twice daily to capture flowers at the appropriate bloom stage. Roses Inc. asserted that cut roses that do not meet these standards have no economic value. Roses Inc. also asserted that the required twice daily harvest is not possible on days when pesticides with an REI greater than 4 hours have been applied, since the WPS early-entry restrictions eliminate the possibility of a second harvest and may, depending on the REI, eliminate both harvests for the second day.

After consulting with the rose industry and gathering information to complete the exception request, EPA determined that the request met the requirements of § 170.112(e)(1) and published a notice in the **Federal Register** on October 30, 1996 (61 FR 56100) (FRL-5571-8). The notice acknowledged receipt of Roses Inc.'s request, described terms proposed by the cut-rose industry, and provided a 30-day comment period. After considering the information obtained through public dialogue and written comments, EPA granted a limited administrative exception. In December 1996, EPA sent a letter to cut-rose growers outlining the terms of this new exception. This action documents the contents of the December letter.

E. Roses Inc.'s Proposed Terms

Roses Inc.'s request for an exception asked for continuance of the terms of

the 1994 exception and an increase of the early entry exposure period from 3 to 8 hours in a 24-hour period just prior to major floral holidays. Specifically, Roses Inc. proposed the following terms:

1. For all products registered for use on roses, early entry to harvest roses by hand is allowed, under the following conditions:

a. The time in the treated area during an REI does not exceed 3 hours in any 24-hour period, (except as provided in (b)).

b. For 2 weeks before major floral holidays, the time in the treated area must not exceed 8 hours in any 24-hour period.

c. No entry is allowed for the first 4 hours and until after inhalation/ventilation criteria on the label has been reached.

d. The early entry personal protective equipment (PPE) specified on the product label must be used by workers.

e. The agricultural employer must properly maintain PPE.

f. The agricultural employer must take steps to prevent heat stress.

g. The worker must read the label or be informed of labeling requirements related to safe use.

h. Pesticide application specific information must be provided.

i. A pesticide safety poster must be displayed.

j. Decontamination supplies must be provided.

k. Workers must be WPS-trained.

l. Workers must be notified orally and information posted regarding the exception.

2. Exception has no expiration or, at minimum, expires in 5 years.

These proposed terms and conditions were the same as those imposed with the 1994 exception with the addition of a longer early-entry time prior to major floral holidays and an extended effective period. According to Roses Inc., there are five major floral holidays resulting in peak production periods. The holidays are Valentine's Day (February), Easter (April), Mother's Day (May), Sweetest Day (October) and Christmas (December).

After discussions with the Agency, Roses Inc. proposed a refinement of the terms of their request. In addition to the terms above, Roses Inc. proposed the following:

1. For products with a 12-hour REI on the label, allow early entry to harvest roses under the following conditions:

a. The time in the treated area for each worker may not exceed 4 hours in any 12-hour REI period;

b. Conditions (b) through (l) above.

2. For products with an REI of 24 hours or more, allow early entry to

harvest roses under the following conditions:

a. Must meet all the early-entry conditions for the 12-hour REI pesticide products listed above.

b. During the first 12 hours of the REI period, early-entry workers would be required to wear additional PPE consisting of a canvas or similar arm sleeve protectors, and a waterproof apron that protects the upper torso and reaches to approximately knee level.

II. Summary of Comments Received and Major Issues

EPA received more than 50 comments on the proposed cut-rose exception. Comments were received from approximately 38 individual cut-rose growers, 9 agricultural associations, 3 government agencies, 3 academicians and 2 farmworker advocacy groups. More than 20 statements were also received from employees of cut-rose growers. Some of these statements were included with certain growers' submittals. A summary of the major issues and EPA's response is provided below.

A. Economic Need for the Exception

The cut-rose market depends on the production of high-quality, unblemished roses to achieve consumer acceptance and thus compete with foreign producers. Since roses are an aesthetic commodity, imperfections such as pest damage are not tolerated. Market demands establish the high quality standards that rose growers must meet. The wholesale flower market demands a cosmetically perfect rose that is free of insects, pest damage and blemishes. Perfection for cut-roses requires the buds to have the same size, shape, and degree of maturity.

To meet the market's standards, cut-rose growers stated they need to control pests and diseases as a vital element in providing a consistent quality product to their customers. According to survey data collected by Roses Inc., growers treat roses with pesticides an average of 6.4 times per month. Comments from growers on the frequency of pesticide applications supports Roses Inc.'s estimate.

Growers and Roses Inc. also commented that the timing of harvest is also critical in providing the market with roses at the same degree of maturity. According to growers and Roses Inc., there is a short window of opportunity to harvest the flower once it reaches this peak stage. The rose industry also asserts the need to harvest frequently is due to the physiology of the rose flower. Roses cut too soon do not open or fully blossom whereas roses

cut late are too full and have a shorter shelf-life. Depending on the season and variety, the window for harvesting a high quality rose once it reaches its peak is about 2 to 6 hours, according to public comments from Roses Inc. and cut-rose growers.

The essential constraint imposed by the WPS on cut-rose production is the REI. This is due to the need to harvest roses at least twice per day under current practice to achieve maximum yield, quality and price. REI's for most of the available pesticides range from 12 to 48 hours. Therefore, the REI may interfere with the ability to harvest when pesticide treatment is also needed, resulting in a negative impact on the industry.

The methods available to cut-rose growers for producing roses and controlling pests are essentially the same as when the original exception was granted. Currently, spraying is performed in the late morning when several pests are most active and when moisture produced by spray equipment will dry rapidly. Late morning spraying would usually prevent afternoon harvest(s) due to the length of most REIs. Hypothetically, spraying could be performed after the last harvest of the day, with reentry into the greenhouse after the 12-hour REI of most pesticides expired the following morning. However, growers and scientists do not agree on this issue. Most of the growers and several scientists expressed concern that late day spraying would prolong leaf wetness due to slower drying late in the day. Higher levels of moisture are believed to increase disease and phytotoxicity. Several growers said that the prevalence of diseases increased when late day spraying was performed. Other growers and scientists believed that late day spraying could be acceptable. Late day spraying would not eliminate the need for an exception covering 24- and 48-hour REI pesticides.

Many growers noted that they are presently using integrated pest management (IPM). Growers mentioned using heating, cooling, ventilating, lighting, nutrition, greenhouse structures alteration and methods of pruning, cutting, and handling of their crops. Even with their screened greenhouses and computer environmental controls, growers contend that they still need pesticides. Growers also stated that chemical rotation is used to control pests and reduce the rate of pest and disease resistance to chemicals. When pest and disease resistance to chemicals increases, the need to treat also increases.

The original WPS exception (59 FR 30265) notes that "EPA is granting a two-year exception to provide rose growers time to adjust pesticide spray schedules, find early-entry alternatives, and develop technology." A condition of approval of the original exception to the cut-rose industry was the expectation that progress would be made toward obviating the need for another exception. Several organizations representing farm workers commented that the lack of adequate effort toward eliminating the need for the exception argues against renewing the exception. Some individual growers have commented that they have attempted to reduce the need for the exception by testing biological controls, such as predatory mites, and changing cultural methods. Several growers and Roses Inc. commented that newer, shorter REI pesticides are not sufficiently effective. Farm worker advocacy organizations wrote that the cut-rose industry did not use the 2 years of the 1992 WPS cut-rose exception to develop safer practices.

Growers commented that they use heating and venting or horizontal air flow or, less commonly, high-intensity lighting, to reduce humidity and free moisture to control disease. Some growers have installed screens over vents to reduce infestation from insects such as thrips and aphids. Roses Inc., asserted that as a small industry under severe foreign competition, it has not had the resources to pursue alternatives to the exception as aggressively as desired. Roses Inc. expressed disappointment that few newer and safer chemicals with short REIs and more biological control methods have not been developed as rapidly as hoped.

According to Roses Inc., the cut-rose industry uses approximately 28 essential chemicals to control many pests. Powdery mildew, botrytis, and downy mildew are the three most significant diseases. Thrips, aphids, white flies, and two-spotted spider mites are the most important insect and mite pests. Roses Inc. and growers commented numerous times that all currently available pesticides are essential to produce domestically-grown cut-roses. Annual spray schedules were supplied by several growers and these document the use of a variety of pesticides.

In many cases several different chemicals, often with different REIs, are available to control each pest. Growers and a consultant for Roses Inc. argued that this variety of pesticides is necessary for several reasons, especially for pest resistance management. These commenters noted that pest resistance has already become a problem with

several pesticides now available, including pyrethroids, abamectin and iprodione. Additional reasons given for requiring different chemicals were: price, relative efficacy, low phytotoxicity, efficacy against multiple pests, mode of application, and speed of achieving control.

While several reasons were provided regarding chemical usefulness, insufficient information comparing the merits of chemicals used to control the same pests was presented, especially when the chemicals had differing REIs. This deficiency should be remedied if another renewal is requested. However, despite presenting less than the desired amount of comparative information regarding pesticides, the Agency believes that there is still a need for the exception no matter which individual pesticides may be used. Regardless of the justification of the necessity of any particular pesticide, clearly the cut-rose industry cannot currently rely only on 4-hour REI pesticides, changes in cultural practices or drastic reductions of the number of pesticide applications. Therefore, even if several individual pesticides were determined unessential, growers would still be faced with applying mostly longer REI pesticides at frequencies similar to the present.

Roses Inc. and several growers raised concerns about the impact of foreign imports on the U.S. cut-rose market and industry. Imported cut-roses reached 66% of the U.S. market, with the largest percent being shipped from Columbia and Ecuador. U.S. growers are concerned about the regulatory limitations they operate under relative to their foreign competitors. Foreign producers have access to stronger and more effective pesticides that are no longer registered in the United States. Imported roses enter the United States free of pesticide-related restrictions. U.S. growers indicated that these factors give foreign producers a comparative advantage over them.

U.S. rose growers stated that they must achieve high quality standards for lower prices to compete with foreign imports in the U.S. rose market. Prices for cut roses have decreased by 3% to 6% between 1992 and 1995. The average annual wholesale prices for hybrid-tea roses in different geographic regions range between 17 and 68 cents per stem, with the U.S. average at 33 cents per stem. Prices peak 1 to 2 weeks prior to major floral holidays, like Valentines Day, and may reach over \$1.00 per stem.

Growers stated that to survive economically, they need to harvest two and sometimes three times a day. A few growers noted occasional exceptions

only harvesting once on Sundays or holidays, like Christmas and New Years. According to rose growers who cut twice a day, the first cut yields 40% to 70% of the daily harvest, with the second cut yielding the remaining 30% to 60%. For those cutting three times a day, the first cut yields 40 to 70%, the second cut 10 to 30%, and the last cut up to 45% of the daily harvest. These percentages seem to vary considerably by geographic region and season. The amount of flowers that mature in the afternoon increases as temperatures and light intensity increases.

Growers indicated without an exception that they lose a minimum of the afternoon harvest(s) when they need to treat with a pesticide(s). If a grower applies a pesticide that has a 12-hour REI after the morning harvest, they will miss a minimum of the afternoon harvest(s). Growers would lose 1 to 2 full days of harvest with an application of a pesticide that has a 24- or 48-hour REI, respectively.

Based on the information collected and provided by growers, losses of 7% to 14% may occur if EPA did not grant the exception. Roses Inc. and many growers estimated losses between 7% to 14% of the annual harvest. Others estimated losses to be 10% to 30% a year. Losses in revenue could range between \$8 and \$16 million annually, assuming losses of 7% to 14%. Growers with a higher frequency of pesticide applications and/or applications of pesticides with 24- or 48-hour REIs will have greater loss estimates.

Secondary markets for roses do exist; however, the prices are significantly lower than those for prime roses. Street vendors selling cut-roses may be considered the secondary market. According to growers, prices for the secondary market range between 8 and 14 cents per stem and up to 30 cents in one area. These prices are 50% to 75% lower than the prime market price and lower than some growers production costs per stem.

A grower's decision to sell roses to the secondary market will depend on their variable production costs. If the unit price is lower than the costs to produce the cut rose, it is not economical for the grower to sell to the secondary markets. This may vary by grower depending on the time of year. For example, a grower may sell flowers to the secondary markets during the summer because their fuel expenditures may be low thus reducing their overall production costs.

Based on the production costs and budget data available, some rose growers will not be able to sustain additional losses even with the exception to the WPS REI requirements.

Budget information was obtained from a few growers and a March 1995 report by the U.S. International Trade Commission (ITC) Report. The ITC collected detailed budget data for 1991 through 1993 and part of 1994. According to the ITC data, almost half of the growers incurred net losses in 1991 and 1992 and two-thirds of the growers incurred net losses in 1993. It is difficult to determine from this data if the same growers incurred losses year after year.

The cost and budget data received from growers showed similar results. Some growers showed profits and others showed net losses. Growers with net losses explained that, over the last year or two, they had implemented changes in cultural practices or made significant capital expenditures, like screens for vents and light systems for the greenhouses. It is difficult to fully interpret the budget data without a broader sample and access to more details.

A large number of rose growers could potentially be effected without the exception to the WPS. The U.S. cut-rose industry is comprised of 175 growers and up to 200 growers when all small growers are included. California growers constitute about 46% of the number of growers and produce at least 65% of the U.S. total production. About two-thirds of all U.S. growers would be considered small. The impact of losses incurred will depend on the efficiency within a greenhouse operation, the pest pressure in each greenhouse, and the ability to adjust spray schedules and the timing of harvest. Growers with few resources, including small growers are likely to be effected the most. Smaller growers may have more limited resources for capital improvements to help reduce pest pressure or install lights as quickly as larger operations. Most likely, larger operations have invested in upgrading their greenhouses with more efficient equipment and facilities. On the other hand, small growers may have more flexibility than really large operations to adjust harvest and spray schedules.

B. Risk To Workers

Commenters noted that the large number and high volume of chemicals used, as well as the high frequency of applications that is typical in rose production indicate potential for high worker exposure and high worker risk. These comments stated that many of the chemicals listed in the Roses Inc., exception request are acutely toxic, or have been shown to cause a variety of delayed effects in laboratory animals, including cancer, reproductive and

developmental effects, neurotoxicity, and endocrine disruption.

Commenters also expressed a belief that rose harvesters are better protected than other agricultural workers. They cited several characteristics of the rose greenhouse to indicate a relative degree of safety. Such characteristics include a stable, skilled work force that tends to be well-trained and receptive to safety training. Also cited is the tendency for rose harvesters to be paid either on an hourly or salary basis rather than a piece rate. This, it is argued, indicates a probability that workers will adhere to safe work practices making use of protective equipment and other safety measures which might be foregone if such measures could slow their work, thus reducing their pay. Some comments also noted that in the greenhouse environment, workers generally have easy access to water for drinking and decontamination, and that in the relatively confined space of a greenhouse, workers are easier to monitor for compliance with safety rules.

Others observed that certain characteristics of the greenhouse environment suggests an increased level of worker risk. Both growers and worker advocates cite the problem of heat and humidity in greenhouses which increases risk of heat-related illness and discourages workers from wearing protective clothing and equipment because it may be uncomfortable. EPA shares the concerns about the risk of heat stress in greenhouses. EPA also notes that, while greenhouse environments tend to be warm and humid, the environment is controllable.

Numerous comments from rose growers indicated excellent safety records for their employees, and many said neither they nor their employees had ever experienced pesticide related injuries or illnesses. Comments from a county agricultural commissioner in California cited a draft report by the Worker Health and Safety Branch of the California Department of Pesticide Regulation. The draft report summarizes cases reported to the California Pesticide Illness Surveillance Program, and covers poisoning incident data for greenhouses and outdoor nursery operations for the years 1990 through 1994. According to this draft report, only three cases of pesticide-related illness, rated as possibly or probably related to pesticide exposure, were indicated as specific to rose growing operations; none of these incidents involved hospitalization, and one involved the worker missing 5 days of work. (EPA notes that some incidents appearing on the draft report cite only

“ornamentals” or do not indicate the crop involved.) These commenters further state that while in other parts of the country many pesticide incidents go unreported, in California, for several reasons, it is rare for incidents to go unreported. The reasons given include California's extensive regulatory program, the general level of public awareness about pesticide use, and requirements placed on the medical care industry to report all suspected pesticide-related cases. This commenter asserts that acute pesticide poisonings, at least in California, are less likely to be overlooked than in the past. EPA believes that incident reporting is higher in California than in other parts of the country, but does not believe that it is rare for cases to go unreported.

Worker advocates argued that, while the reported number of pesticide-related incidents may be small, many incidents still go unreported. Even the California Incident Reporting System, these commenters argue, documents only a small fraction of the actual incidents that occur because: (1) Many farmworkers cannot afford to take a day off work to seek medical treatment, so they continue working despite symptoms of acute poisoning; (2) many farmworkers lack the financial means to secure medical care, or lack transportation to get to a medical provider; and (3) often farmworkers and medical providers do not recognize or report symptoms of pesticide exposure. Several commenters also expressed concern over delayed effects that are difficult to link to pesticides because the exposure does not result in immediate symptoms, and therefore does not get reported. Such effects may include cancer, reproductive and developmental effects, neurotoxicity, and endocrine system disruption. The Association of Farmworker Opportunity Programs states that incidents are under reported since the symptoms of pesticide poisoning often mimic the symptoms of colds and flu.

Commenters expressed disbelief that repeated or prolonged pesticide exposures could lead to such delayed effects. Some noted that family members and friends who have worked in the rose industry for a number of years continue to enjoy good health. Others criticized the Agency's concern for effects resulting from repeated low-dose exposures as “conjectural and speculative theorizing,” and suggested that the Agency should assume the burden of proof that such effects are real before placing entry restrictions on the industry.

One grower mentioned that none of his retirees filed claims for effects

suffered from long-term use. Another grower wrote that in 50 years of operation they have never had a case of poisoning or a case of someone getting sick from applying pesticides. One grower mentioned that his employees were more likely to have an increased exposure to toxic chemicals while they were pursuing their hobbies than while harvesting roses.

EPA agrees that the likelihood of pesticide-related incidents going unreported in California is much lower than in other states where systems for reporting incidents are not in place, and where the regulatory framework providing for workers' health and safety may not be as developed. Nevertheless, EPA believes it is difficult to conclude, based on incident data, that reentry protections such as REIs are less important to the health and safety of rose harvesters than to other farmworkers. While the number of rose workers reported to have experienced pesticide-related illness or injury in California appears to be small, it may not be an accurate gauge for rose workers nationally, and does not account for size of the rose work force relative to the size of the general agricultural work force. Employers' Reports of Occupational Injuries, compiled by the California Department of Industrial Relations (1981 - 1990) indicate that workers in horticultural specialty crops, which include roses, had a slightly higher rate of pesticide poisoning (0.53 poisonings per 1,000 workers per year) than that for all agricultural workers (0.46 poisonings per 1,000 workers per year).

Regarding delayed effects, EPA acknowledges that several rose production chemicals identified by Roses Inc., have been shown in laboratory animals to cause the variety of effects cited by worker advocates in their comments. However, EPA does not have sufficient data to determine whether the potential level of exposure to rose harvesters corresponds to levels of concern identified in the toxicological studies that demonstrated these effects. More importantly, EPA has generic concern for workers working in areas shortly after pesticide applications have been completed when pesticide residue levels are at their highest and the potential for worker exposure is greatest. Such concern is heightened when many different chemicals are used and cultural practices dictate frequent or prolonged reentry, as is the case with rose harvesting. Finally, EPA agrees that such delayed effects would rarely, if ever, be captured in pesticide incident reports.

Worker risk can be decreased by reducing exposure during periods when pesticide residues are at the highest levels, by limiting the time workers are exposed, and by limiting the workers' direct contact with treated surfaces. EPA believes that the early-entry requirements set out in this exception acceptably reduces worker contact with pesticide-treated surfaces. Worker contact will be limited by not allowing entry for the first 4 hours following application and until inhalation and ventilation criteria on the label has been met; by limiting the duration of the contact to 3 hours and by requiring PPE to protect workers from treated surfaces.

C. Personal Protective Equipment (PPE)

Some growers wrote that safety has always been important to them. One cut-rose grower wrote that they have not had serious problems with pesticide exposure in the history of their organization because of their stringent training program and serious attitude toward worker protection. An employee wrote that each worker has and uses their own safety equipment including full protective gear. One harvester stated that the PPE used during the REI was both comfortable and protective.

One grower mentioned that, except for the respirators, the PPE equipment does not appear to unduly stress the staff. Another grower explained that his employees were agreeable to the use of special gloves, sleeves and aprons; however, they were opposed to the use of full protective suits, respirators, boots, gloves and face shields. One cut-rose grower wrote that he tried to have workers use coveralls, but everyone complained about the heat. Another grower mentioned that the employees complain about the PPE being uncomfortable in the heat of the summer; however, he writes that he allows plenty of water breaks.

A grower mentioned that his employees preferred leather gloves rather than rubber gloves because of comfort and perspiration in chemical resistant gloves. In a public dialogue with rose harvesters, one harvester mentioned that his hands were raw after using chemical resistant gloves.

Several growers and harvesters mentioned that they had complete laundry and shower facilities. One grower with laundry and shower facilities stated he assigns an individual to launder the PPE.

EPA believes that PPE, along with other provisions of this exception, will reduce worker exposure to pesticide residues and thus will reduce the risk.

D. Time Allowed in the Treated Area

Several growers' comments supported the Roses Inc. request that the time allowed in treated areas be expanded from 3 hours per worker per day to 4 or 8 hours per worker per day. Other growers commented that by rotating staff and using pesticides with 12-hour REIs or less, less than 3 hours per worker per day was sufficient to maintain normal harvest levels.

EPA notes that the shorter the workers' time in the treated area, the less potential exposure the worker will experience. By limiting early-entry rose harvesters to 3 hours per worker per day, EPA believes potential harvester exposure and resulting potential risk will be considerably less than would be expected if workers' time in treated areas is expanded to 4 or 8 hours.

E. Expiration Date

Roses Inc. requested the Agency to grant an exception for 5 years or indefinitely. Some commenters stated that the exception should be longer than 2 years because it would not be enough time to establish new methods that could be successfully implemented. One grower stated that the exception should be granted for 5 years.

Several growers suggested granting the exception permanently until compelling data shows that the issue needs to be revisited. One grower mentioned the exception should be granted for an unlimited amount of time and remove the use of the exception from any grower that has a series of problems or multiple violations.

EPA expects the cut-rose industry to work towards eliminating the need for this exception. Therefore, this exception will expire on October 4, 1999. Although the technology may not exist in 2 years to completely eliminate the need for a cut-rose exception, the Agency will want to review the advances made in greenhouse technology and cultural cut-rose practices. In addition, EPA will take into account the conclusions from the NIOSH's study on PPE effectiveness and any relevant toxicological data that may be available at that time. If another exception request is received, EPA will need to make considerations based on all additional information that may be available at that time.

III. EPA's Exception Decision

In the WPS, EPA prohibited, in general, early entry for hand labor, such as harvesting because EPA concluded that entry during a restricted-entry interval to perform routine hand-labor tasks is rarely necessary, that PPE for

workers is not always practical because workers may remove it or use it incorrectly, and that the PPE itself may generate heat stress. In this case, EPA believes that the risks for rose harvesters will be mitigated by the limited time harvesters are allowed in the treated area, the use of PPE and the short period of time that it will be worn, accessible decontamination facilities, and provision of label-specific information to harvesters and basic pesticide safety information.

However, to provide greater certainty about the potential risk to early-entry rose harvesters, EPA has provided funding to the National Institute of Occupational Safety and Health (NIOSH) to conduct and evaluate the effectiveness of PPE at mitigating residue exposure. EPA believes it is essential to examine the effectiveness of PPE to mitigate worker exposure and intends to consider the results of NIOSH research, as well as any additional data generated in responding to future exception requests. Therefore, if the rose industry believes that there may be a continuing need for an exception for rose harvesting, EPA strongly encourages that they pursue data demonstrating the effectiveness of risk reduction measures, such as PPE, in addition to the EPA-funded NIOSH research.

While the rose industry has begun to explore alternatives to early entry, such as adjusting spray schedules, trying engineering controls, and other safe alternatives, EPA believes a more systematic approach is necessary to progress toward eliminating the need for an exception. EPA also believes that certain alternate practices have promise for eventually reducing or eliminating the need for early entry for rose harvesting in greenhouses. Therefore, EPA strongly recommends that the cut-rose industry pursue data development and research on such alternatives, and pilot test those alternatives which appear to be most promising.

A. EPA's Risk Assessment

Post-application worker exposure is a function of time, activity, and pesticide residue levels. Risk increases with longer periods of exposure, high levels of contact with treated surfaces and when contact occurs while pesticide residue levels are at their highest. Worker risk can be reduced by limiting exposure during periods when pesticide residues are at the highest levels, by limiting the time workers are exposed, and by limiting the workers' direct contact with treated surfaces.

During peak production periods when rose bushes have been cultivated for

maximum production, rose harvesters can have considerable contact with foliage during harvesting activities. Since cut-rose harvesting typically occurs twice per day, 6 or 7 days per week, rose harvesters are likely to have repeated exposure to the pesticide residues present in greenhouses. The high frequency of pesticide applications to roses, combined with the relatively slow expected breakdown of pesticides applied in greenhouses, indicate that pesticide residues will be present during rose harvesting activities. If harvesting takes place while foliage is still wet, or when residues have not dried due to irrigation, dew, high humidity or condensation, transfer of pesticide residues from foliage to the rose harvesters will be higher, resulting in an increase in risk. This exception requires that harvesting not take place until 4 hours after application and after all inhalation and ventilation criteria on the label has been met. This combined with the cut-rose growers need to reduce dew, high humidity, and condensation in the greenhouses for optimum roses should decrease harvesting taking place while foliage is wet.

Toxicological endpoints for repeated pesticide exposures tend to be lower than for single and short-term exposures. Several chemicals used on roses have been shown to produce adverse effects in laboratory animals. EPA does not have sufficient data to determine whether the potential level of exposure to rose harvesters corresponds to the levels of concern identified in the toxicological studies that demonstrated these effects. Given that exposure to pesticides used in cut-rose cultivation has the potential to cause adverse effects, a way to reduce that risk is to reduce the exposure. A worker's exposure can be decreased with shorter periods of exposure, less contact with treated surfaces and with reduced pesticide residue levels.

EPA has designed this exception to reduce the risk associated with increased exposure during early entry while balancing the benefits of giving cut-rose growers flexibility to perform necessary harvesting tasks. EPA is maintaining the 3-hour maximum time allowed in the treated area within a 24-hour period rather than allow unlimited entry during the period prior to major floral holidays as Roses, Inc. requested. The Agency concludes that this is sufficient time to harvest and combined with the other protections required under this exception, EPA believes the benefits of a limited 3-hour entry period outweigh the risks of exposure in that period.

EPA believes that risk for rose harvesters will be mitigated by limiting time harvesters are allowed in the treated area, the use of PPE, the availability of decontamination supplies, and the provision of label-specific information to harvesters and basic pesticide safety information.

EPA believes that the early-entry requirements set out in this exception acceptably reduces worker contact with pesticide-treated surfaces. Worker contact will be limited by not allowing entry for the first 4 hours following application and until inhalation and ventilation criteria on the label has been met; by limiting the duration of the contact to 3 hours and by requiring PPE to protect workers from treated surfaces.

The following additional factors or terms contributed to EPA's decision: (1) Early entry PPE could be comfortably worn for 3 hours; (2) use of unattached absorbent glove liners make it much more likely that harvesters will wear the required chemical resistant gloves or liners underneath the optional leather gloves; (3) there is approximately only 200 greenhouse cut-rose growers, facilitating communication and compliance monitoring activity between the rose industry and EPA; (4) the scale of greenhouse operations and limited number of harvesters per greenhouse should allow employers to more easily ensure that workers wear the PPE; (5) cut-rose growers using this exception will be required to report any incidents which harvesters believe are the result of pesticide exposure occurring during early-entry harvesting under the conditions of this exception; (6) running water, and in some cases showers, for decontamination and heat-stress alleviation are more accessible in greenhouse operations than in field settings; and (7) the exception will be in effect for less than 3 years before reevaluation. EPA therefore believes that early entry with PPE is feasible and provides adequate reduction of risks to rose harvesters.

B. Economic Analysis

Through written comments and public dialogue, the cut-rose industry has made a case that entry during the REI to harvest cut roses is necessary, and that prohibiting such entry could have a substantial adverse economic impact on growers of these commodities. Based on written statements received from the rose industry, on information gained during public meetings and greenhouse tours, as well as on EPA's knowledge of rose production, EPA finds that the benefits of early entry are substantial. The rose industry has provided sufficient

information demonstrating that routine entry during an REI to harvest roses twice daily is still necessary and that prohibiting such entry could have a substantial economic impact on cut-rose growers.

Depending on the product applied, the associated REI, and the time of year, growers could lose 25-50% of their daily revenues on the days pesticides are applied. EPA believes that the cut-rose industry cannot absorb this loss without significant repercussions. Additionally, since the exception is subject to conditions designed to mitigate risk to early-entry workers, EPA believes that early entry under the terms of this exception will not pose unreasonable risks to rose harvesters.

IV. Terms of the Exception

Use of this exception is conditioned on the following requirements:

A. Completed Conditions and Certification Statement

Agricultural employers must read and send a completed Conditions and Certification Statement to the EPA before using this exception (Forms may be obtained by writing, calling, faxing or e-mailing Sara Ager at the address and telephone number listed in FOR FURTHER INFORMATION CONTACT.).

B. Compliance with Requirements

Agricultural employers must fully comply with the early-entry requirements of this exception:

1. No entry for first 4 hours after application and until after any inhalation and ventilation criteria specified on the label has been reached (§ 170.112(c)(3)).
2. Workers may enter a treated area during an REI to perform only hand harvesting of greenhouse grown roses (exception to § 170.112(c)(1)).
3. A worker's time in the treated area during an REI for hand harvesting shall not exceed 3 hours within any 24-hour period (exception to § 170.112(c)(2)).
4. Workers must read the label or be informed in a language the worker understands of labeling requirements related to safe use.
5. The agricultural employer shall notify workers before entering a treated area, either orally or in writing, in a language the workers understand, that the establishment is using this exception to allow workers to enter treated areas before the REI expires, to hand harvest roses.
6. Agricultural employers must provide, properly maintain, and ensure workers wear the early entry PPE listed on the label in accordance with § 170.112(c)(4)-(c)(9). When chemical

resistant gloves are required on the label, workers have the option of wearing the leather gloves over the required chemical resistant gloves. In accordance with § 170.112(c)(4)(vii), once leather gloves have been worn for early-entry use, thereafter they shall be worn only with chemical-resistant liners and they shall not be worn for any other use.

In addition, unattached, absorbent glove liners may be worn underneath the chemical resistant gloves or liners, provided the unattached, absorbent liners are completely covered by the chemical resistant liner or glove (exception to § 170.112(c)(4)(vii)). Absorbent liners must be disposed of after each day of use in early-entry harvesting.

7. All other applicable provisions of the Worker Protection Standard (40 CFR part 170) also remain in effect.

C. Reporting Incidents

Agricultural employers using this exception are required to report any incidents that harvesters believe are the result of pesticide exposure occurring during early entry harvesting under this exception. The agricultural employer shall notify EPA (address provided under FOR FURTHER INFORMATION CONTACT) within 5 consecutive days of any incident believed to be the result of exposure to pesticides or pesticide residues that occurred during early-entry harvesting performed under the conditions of this exception.

In addition, there may be no findings of unacceptable levels of risk by EPA, resulting from NIOSH's investigations, from other risk studies, or from incident reporting and investigation. If the Agency receives information that shows the health risks posed by early entry to areas treated with pesticides registered for use on cut-roses are unacceptable, it reserves the right to not allow specific chemicals to be used in conjunction with this exception. EPA reserves the right to withdraw or revise the scope and conditions of this exception at any time, in accordance with § 170.112(e)(6).

V. Reevaluation of the Cut-rose Exception

This exception will expire on October 4, 1999. In the interim, EPA is expecting the cut-rose industry to actively pursue alternate cultural methods that will eliminate the need for this exception. EPA also expects that with the research, Roses Inc. and other industry trade groups will sponsor outreach education with cut-rose producers explaining the exception, the need for strict compliance with its terms and explain

the risk concerns presented by pesticide use and worker entry during REIs.

The cut-rose industry was not able to make adequate progress over the 2 years that the original exception was in place to eliminate the need for renewal. The effort of individual growers to attempt to use alternatives to long REI chemicals has not been sufficient to obviate the need for a new exception. Some alternative measures that appear promising initially may have serious shortcomings when examined more closely. For example, spraying after the last harvest was generally claimed to be unacceptable for a number of reasons, including several given above. However, little documentation was presented concerning these shortcomings, and there was no evidence given regarding their impact. Some of these shortcomings, while generally accepted, remain hypothetical or anecdotal.

In addition, not all growers had the same experience when using alternatives. Several growers commented that they used late day spraying successfully, at least since the original exception expired in June 1996. It is also possible that hypothetical expectations of failure may not be borne out by experience or experiment. For example, while several scientists and growers were concerned that insects that are more active early in the day would not be effectively controlled by late spraying, two growers commented that they sprayed late for thrips.

It is important to demonstrate not only the existence of some noted shortcomings, but also to measure their impact. It is possible that where these problems exist, their magnitude and/or frequency of occurrence is sufficiently small to be acceptable to growers. Perhaps more importantly, where real and significant problems are found, it may be possible to ameliorate their effects. The specific conditions in which problems of applying alternatives arise may be identified, giving growers more confidence in using them at other times.

On several issues regarding alternate practices and the need for all currently available chemicals, many growers and the consultant for Roses Inc., commented that due to variations in growing conditions and pests among different growers, even in the same region, generalizations could not be made about the adequacy of alternate practices. By extension, attempts to implement these alternate practices in the entire industry would seriously harm some growers. While there is undoubtedly some validity in arguments about variability, such general arguments are, by nature, practically unverifiable. Therefore, better

documentation of the impacts of using alternate practices will be necessary in the future.

In light of the cut-rose industry's claimed lack of adequate resources to conduct necessary studies of alternatives and because of the inability to answer some basic background questions necessary for the thorough evaluation of the need for an exception, the Agency will work with the cut-rose industry and scientists knowledgeable about cut-rose production over the next 2 years to gather necessary information and perform research in areas that may move the industry from the need for further exceptions. Therefore, in the next 2 years, the industry, should show continuing progress in documenting and demonstrating, but not limited to, the following:

1. Adequate justification for including all current pesticides, in the exception especially 24- and 48-hour REI pesticides.

a. There is more than one chemical of a given class or mode of action, that controls the same pest or spectrum of pests, the industry should justify the need for maintaining all such chemicals in the exception, i.e. describe the advantages and disadvantages of each chemical.

b. Advantages of specific chemicals, such as price or efficacy differences, should be quantified. Part A should be completed within the first year of the exception so that part B may be presented to the Agency by August 1998.

2. Due to the large number of pests and chemicals required by the industry, the Agency does not believe that registration of new, safer chemicals or biological control agents in the next 2 years will be sufficient to replace many of the longer REI chemicals currently used. Therefore, efforts to eliminate the need for another exception should focus on practices that allow avoidance of the REI of existing chemicals, including:

a. Systematic research of spraying at times that minimize the need for an exception, in particular spraying after the last daily harvest. Such research should include measurement of the impact of late day spraying on pest damage and phytotoxicity. Attempts should be made to ameliorate problems encountered with implementation of altered spray schedules.

b. Exploration of techniques that allow early harvesting of roses, which may eliminate or reduce the need for harvesting several times per day.

Roses Inc. and several growers requested a longer term for the current exception. Several growers also commented that 2 years is an

unrealistically short time period to research and implement new methods of pest control or production. It is therefore critical that clear and measurable objectives and goals are established early and that these goals and objectives, and progress in meeting them, are regularly reported to the Agency. The cut-rose industry should work closely with the Agency and researchers to accomplish these goals. Success or difficulty in accomplishing such benchmarks may then be used should another exception be desired.

EPA is interested in working with the rose industry to identify specific research efforts, identify competitive grant funds that may be available to support such research, discuss protocols and time frames for initiating and completing studies, and incorporating practices at the individual grower establishment. However, establishing research goals, objectives, time lines, and measurements is fundamentally the responsibility of the cut-rose industry. Sara Ager in the Certification and Occupational Safety Branch will continue to be the lead Agency contact for the rose industry. The Agency is willing to meet with the rose industry to discuss implementation of the exception, review any findings from the NIOSH risk investigations, and review the industry's progress in reducing the need for early entry and this exception.

VI. Public Docket

A record has been established for this administrative decision under docket number "OPP-250121." A public version of this record, including printed, paper versions of electronic comments, that does not include any information claimed as CBI, is available for inspection from 8:30 a.m. to 4 p.m., Monday through Friday, excluding legal holidays. The public record is located in Crystal Mall #2, Office of Pesticide Programs, Environmental Protection Agency, 1921 Jefferson Davis Highway, Arlington, VA. Electronic comments can be sent directly to EPA at opp-docket@epamail.epa.gov.

VII. Regulatory Assessment Requirements

This document is an adjudication of eligibility for an exception to certain requirements of the Worker Protection Standard, 40 CFR part 170. As such it is not a regulation or rule and therefore is not subject to review by the Office of Management and Budget (OMB) under Executive Order 12866 entitled *Regulatory Planning and Review* (58 FR 51735, October 4, 1993), the Regulatory Flexibility Act, 5 U.S.C. section 601, *et seq.*, or Executive Order 13045, entitled

Protection of Children from Environmental Health Risks and Safety Risks (62 FR 19885, April 23, 1997). It does not impose any enforceable duty or contain any unfunded mandate as described under Title II of the Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4). It also does not require any prior consultation as specified by Executive Order 12875, entitled *Enhancing the Intergovernmental Partnership* (58 FR 58093, October 28, 1993) or special considerations as required by Executive Order 12898, entitled *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 FR 7629, February 16, 1994).

The information collection requirements associated with this exception have been approved by OMB pursuant to the Paperwork Reduction Act (PRA), 44 U.S.C. 3501 *et seq.* under OMB control number 2070-00148 (EPA ICR No. 1759). An Agency may not conduct or sponsor, and a person is not required to respond to a collection of information subject to OMB approval under the PRA, unless it has been approved by OMB and displays a currently valid OMB control number. The OMB control numbers for EPA's regulations, after initial display in the preamble of the final action or rule, are listed in 40 CFR part 9 and appear on any related collection instrument.

The total public burden related to the information collection activities in this exception are estimated to be 600 burden hours, with the average burden for each cut rose grower estimated to be 3 burden hours. For analysis purposes, "burden" includes the total time, effort, or financial resource expended by persons to generate, maintain, retain, or disclose or provide information to or for the Agency. As defined by the PRA, "burden" means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

Send comments on the accuracy of the burden estimates, and any suggested

methods for minimizing respondent burden, including through the use of automated collection techniques, to the Director, OPPE Regulatory Information Division, U.S. Environmental Protection Agency (Mail Code 2137), 401 M St., SW., Washington, DC 20460, with a copy to the Office of Information and Regulatory Affairs, Office of

Management and Budget, 725 17th St., NW., Washington, DC 20503, marked "Attention: Desk Officer for EPA." Please remember to include the OMB control number in any correspondence.

List of Subjects in Part 170

Environmental protection,
Administrative practice and procedure,

Labeling, Occupational safety and health, Pesticides and pests.

Dated: September 29, 1997.

Susan H. Wayland,

*Acting Assistant Administrator for
Prevention, Pesticides and Toxic Substances.*

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