OCCUPATIONAL ILLNESSES AND INJURIES TO FIELD WORKERS EXPOSED TO PESTICIDE RESIDUE IN CALIFORNIA AS REPORTED BY PHYSICIANS IN 1980

by

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SUMMARY

In 1980 there were 260 cases of illness or injury to field workers in California due to occupational exposure to pesticide residue. The incidents were reported by local area physicians and investigated by the local county agricultural commissioner. Of the 260 cases, 53 were suspected systemic illnesses, 24 were eye injuries, and 183 were skin injuries. There were 3 incidents of large numbers of harvest workers (one incident each involving peaches, cauliflower and grapes) reporting illnesses; there were 22 people involved in each of the first two incidents, and 56 in the third. In the remainder of the incidents there were from one to three persons involved in each incident. Of the 260 cases, 160 involved exposure to sulfur, often in combination with Omite. There was a reported total of 256 days of work lost by employees in this classification, and a total of 13 days of worker hospitalization.

INTRODUCTION

Employees classified as "field workers exposed to pesticide residue" are those who hand-cultivate, thin, or harvest agricultural commodities. Illness data for this job category was compiled by the California Department of Food and Agriculture, Worker Health and Safety Unit, using reports filed by individual physicians. Under Section 2950 of the California Health and Safety Code, any physician who suspects an illness or injury has been caused by a pesticide is required to report it within 24 hours to the county health officer, who subsequently reports it to the county agricultural commissioner, the Department of Food and Agriculture, and the Department of Health Services. Reported incidents are investigated by the county agricultural commissioners' staffs and filed with the Worker Health and Safety Unit.

In 1980, physicians reported 2,423 illnesses suspected to be caused by exposures to pesticides. Of these, 1,355 were confirmed to be occupational illnesses due to pesticides. Each incident involving employees in the classification of field workers exposed to pesticide residue is described under "Case Studies."

Suspected Systemic Illnesses - 53 Cases

During 1980, there were 53 cases of confirmed or suspected systemic illness due to pesticide exposure. A description of each episode follows:

Guthion (azinphos-methyl) was applied to a 50-acre block of peaches in Stanislaus County during mid-summer. Benlate and suflur were applied to the same area 18 days later. Zolone was applied to parts of the orchard 15 days before the Guthion. A crew of fieldworkers began, and completed, the first picking 21 days after the Guthion application. The second picking occurred 11 days after the first (32 days after the Guthion application), and 22 workers experienced organophosphate poisoning. The symptoms of 6 workers ranged from headache, nausea, and vomiting to muscle spasms and bradycardia. Three of these workers were admitted to a hospital, treated with atropine, and observed. Two were hospitalized for 2 days, and the third remained 4 days. Each person lost an additional 5 workdays. The other 3 symptomatic workers were treated, observed, and released with no disability. Although the remaining 16 workers demonstrated no illness signs or symptoms that were reported, a physician diagnosed "possible organophosphate poisoning," as all the workers had reduced blood cholinesterase levels. The treatment provided the 16 asymptomatic workers was not reported. There was no disability reported for these workers.

A second incident occurred in Monterey County during the same month. Twenty-two fieldworkers were exposed to mevinphos and phosphamidon residue as they were banding cauliflower 27 hours after the application of the pesticides. This was before the expiration of the three day re-entry interval for this combination of organophosphates. The workers suffered various symptoms ranging from mild headache to nausea, dizziness and blurred vision. Sixteen of the field workers went to one hospital

emergency room and the other 6 went to another hospital emergency room. Fourteen of the former 16 were treated and released. The other 2 were treated and remained in the hospital for less than 24 hours. Of the 6 workers taken to the other hospital, 3 were treated and hospitalized for more than 24 hours and the other 3 were treated and released. The total hospitalization for the 21 workers was 3 days, and the total workdays lost was 6.

A worker was shoveling soil in a field 5 hours after the area had been treated with Azodrin (monocrotophos) and methidathion before the expiration of the re-entry interval. After working 4 hours, his employer advised him to leave the field, return home, and shower. Later, he experienced headache, nausea, and weakness. He was taken to a hospital emergency room where a physician ordered a blood cholinesterase test. Treatment was not reported. The worker was not hospitalized, and he lost 7 workdays.

Two field workers experienced nausea, headaches, and shakiness after working for approximately 1 hour in an improperly posted field which had been sprayed with parathion the previous day. Their cholinesterase levels as tested were not depressed and their physician stated that he suspected that they had experienced reactions to the parathion's odor rather than to the chemical's cholinergic effects. One worker lost 3 days from work, the other, none.

A fieldworker experienced shortness of breath and "a very sick feeling" while working in a field. The field had been treated with azinphos-methyl. The exact time of application was not reported. The worker was taken to an emergency room where a physician described his signs and symptoms as constricted pupils and mild muscle weakness. The worker was treated with atropine and observed. He was not hospitalized, and he lost 2 workdays.

A worker began experiencing nausea as he weeded a field which had been treated with mevinphos. The re-entry interval of 2 days had expired. He went to an emergency room complaining of weakness and experiencing vomiting. The physician ordered a blood cholinesterase test. His cholinesterase levels were below normal, and the physician treated the worker with atropine. The worker was not hospitalized, and he lost 1 workday.

A worker was tying vines in a grape vineyard which had been treated with sulfur 2 weeks earlier. As she worked, a field 1000 feet to the north was being sulfured aerially. Although no re-entry violations occurred, and no drift was observed by other workers, she experienced dizziness and coughing. She was taken to a physician who examined her. he stated his findings "a little bit dizzy, has coughed, the coughing could give her some ventilation that made her dizzy. Little mucous, does not smoke." The physician diagnosed "allergies, but most likely direct irritation from sulfur." He prescribed steam inhalations and an expectorant for the cough. The worker lost no workdays.

While suckering and tying vines, a fieldworker experienced a runny nose, sore throat, headache, and itching and swollen eyes. Sulfur had been applied to the vineyard 9 days earlier. The worker was taken to a physician who diagnosed the illness as an allergic reaction. The medical treatment was not specified. No workdays were lost.

A fieldworker experienced coughing, breathing difficulty, and he developed a bloody nose as he worked a field which had been treated with an undetermined chemical on an unspecified date. He was taken to a physician who treated his injury with a steroid dressing, and advised the worker to wear a face mask while working in fields. The worker lost no workdays.

One of several hundred employees grafting rose plants visited a physician for a routine physical examination (he complained of no illness symptoms). The rose fields had been treated with Azodrin (monocrotophos) on an unspecified date. Although the worker complained of no illness, the physician ordered a blood cholinesterase test. The worker's cholinesterase level was at the lower limit of the laboratory normal range. No treatment was provided, but the physician requested the test to be performed 1 week later. The worker lost no workdays.

Eye Injuries - 24 cases

During 1980, there were 24 eye injuries to fieldworkers due to occupational exposure to pesticides. A description of these episodes follows:

Sixteen persons sustained eye injuries while working in vineyards treated with sulfur. Fourteen separate episodes accounted for these injuries (2 episodes involved 2 persons, each). None of the eye injuries occurred during the time of sulfur application or during the 24-hour safety interval. All 16 injuries resulted from dislodgeable sulfur residues entering the workers' eyes. In all 16 cases, the eye injuries occurred in vineyards while fieldworkers were performing routine grapevine maintenance. A brief description of each sulfur-related eye injury follows:

While tipping grapes 2 days after a sulfur application, a fieldworker began experiencing eye irritation. She was taken to a physician's office, and he diagnosed her injury as bilateral conjunctivitis. Her eyes were irrigated, and an ophthalmic ointment and a patch was applied to 1 eye. She lost 3 workdays.

A worker accidentally rubbed her eyes while tying vines which had been treated with sulfur. Her eyes became irritated, and she was taken to a physician who diagnosed the injury as chemical conjunctivitis. He irrigated her eyes and prescribed ophthalmic drops and an ointment. She lost 3 workdays.

A worker's eyes began itching as she was picking grapes in a vineyard which had been treated with sulfur 65 days earlier. The physician she visited said she was extremely susceptible to sulfur. She was given a visual acuity test, her eyes were irrigated, and ophthalmic drops were prescribed. The worker lost 3 workdays.

While working under vines, a fieldworker experienced eye irritation and was taken to a physician. Sulfur had been applied to the vines on an unspecified date. An ophthalmic ointment was prescribed. The worker lost 1 workday.

Residual sulfur dropped into the eye of a fieldworker as she was turning canes. Her eyes became irritated, and she was taken to a physician who diagnosed her injury as conjunctivitis secondary to sulfur exposure. Her eyes were irrigated, and ophthalmic drops were prescribed. The worker lost no workdays.

While performing an unspecified job in a vineyard which had been treated with sulfur, a fieldworker experienced eye irritation. He was taken to a physician who diagnosed the injury as bilateral conjunctivitis and prescribed an ophthalmic ointment. The worker lost no workdays.

A fieldworker experienced eye irritation while suckering vines which had been treated with sulfur. The worker visited a physician who diagnosed the injury as bilateral conjunctivitis. An ophthalmic ointment was prescribed. No workdays were lost.

Two workers experienced eye irritation while lifting grapevines which had been sulfured. They did not visit the same physician, but both injuries were diagnosed as conjunctivitis. The medical treatment was not reported. Neither worker lost any workdays.

While picking grapes, a field worker's eyes became irritated. She visited a physician who diagnosed the injury as mild conjunctivitis secondary to sulfur. He prescribed ophthalmic drops. The worker lost no workdays.

Sulfur blew into the eyes of a fieldworker as he was picking grapes. The worker visited a physician who diagnosed the illness as an infected eye. The eyes were irrigated, and the physician prescribed an ophthalmic ointment. The worker lost no workdays.

While thinning grape leaves and tipping vines, a worker developed swollen eyes. Sulfur had been applied to the vineyard 3 days earlier. The worker visited a physician who prescribed ophthalmic drops. The medical treatment was not reported. No workdays were lost.

Two workers experienced eye irritation as they were thinning grapes in a sulfured vineyard. Both workers visited a physician who diagnosed their injuries as conjunctivitis. The physician irrigated their eyes. Additional treatment was not reported. The period of disability required by the workers was unspecified.

While letting down bunches of grapes, residual sulfur blew into the eyes of a fieldworker. She visited a physician who diagnosed the injury as acute conjunctivitis. her eyes were irrigated; no other treatment was provided. Her disability was not reported.

Sulfur fell into a fieldworker's eyes as she was picking grapes in a vineyard which had been treated with sulfur. One eye became irritated, and she visited a physician who diagnosed the injury as conjunctivitis. The physician irrigated the eye and provided her with an eye patch. Her disability was not reported.

The remaining 8 eye injuries to fieldworkers in 1980 involved pesticides other than sulfur alone. The cases are described below.

A field worker reported irritated eyes after pruning trees in an orchard that had been sprayed with sodium polysulfide, a fungicide and insecticide, earlier that day. The following day he visited a physician who prescribed topical antibiotics and a cortisone compound. Two workdays were lost.

A field worker developed an eye irritation after thinning peaches in the same orchard for 5 days. The orchard had been treated with Omite and azinphos-methyl (Guthion) 25 days earlier. The worker visited a physician who diagnosed the injury as an ulceration of his left eye and treated it with antibiotic/anti-inflammatory ointment and drops, and a tetanus toxoid injection. No workdays were lost.

After picking peaches for approximately one hour in an orchard that had been dusted with a sulfur and captan mixture 48 hours earlier, a picking crew member complained of a burning sensation in his eyes. He was sent to a physician who treated the condition with antibacterial eye drops. No workdays were lost.

A worker harvesting grapes developed conjunctivitis in both eyes. The vineyard had been treated with sulfur several days earlier. He was taken to a physician who treated him with anti-bacterial eye drops. No workdays were lost.

A field worker counting bunches of grapes in a vineyard that had been treated with Omite 29 days previously developed an eye irritation. he sought medical attention and was diagnosed as having mild conjunctivitis. He was treated with an opthalmic ointment and released. No workdays were lost.

A field worker had dust blow into his eyes while working in a melon field. The field had been previously treated with an undetermined pesticide. he visited a hospital emergency room where a physician diagnosed the worker's condition as chemical conjunctivitis and treated it with an antibiotic ointment. The number of workdays lost, if any, was undetermined.

A worker picking peaches developed conjunctivitis in both eyes. The orchard he had been working in had been treated with sulfur and sevin (carbaryl) at an unreported earlier date. He visited a physician who prescribed an antibiotic ointment. The number of workdays lost, if any, was undetermined.

A man who was working in a peach orchard that had been treated with Dibrom 8 (naled, re-entry interval 24 hours) 2 days previously, suffered from an eye irritation. He was treated by a physician in an unspecified manner. Disability, if any, was not reported.

Skin Injuries - 183 cases

There were 183 cases of skin injuries due to pesticide exposure during 1980. A description of each episode follows:

A series of episodes occurred on a large grape growing ranch which involved 56 fieldworkers experiencing skin rashes after turning cane in various vineyards. The rashes started appearing in mid-June and continued for about a 3-week period. These field workers were divided among several work crews but all were employed by the same company. All the vineyards these people worked in had been dusted by ground with sulfur at a rate of 7-10 pounds per acre every 5 to 7 days throughout the season. Omite was applied to many (but not all) of the vineyards at various times along with Dipel and foliar fertilizers on occasion. All of the pesticide applications were apparently made in compliance with label instruction; none of the fieldworkers were allowed to enter the vineyards before the appropriate re-entry intervals had elapsed. California's re-entry interval for both Omite and sulfur during 1980 on grapes was 24 hours. In previous years, this company did not allow their workers into a field treated with Omite for 4 or 5 days (even though the legal re-entry interval was only 24 hours). Due to abnormally high fungus infections and mite infestations on the grapes, the fieldworkers were instructed to turn canes in the vineyards sooner after these two pesticides had been applied than in previous years; many workers entered vineyards 2 days after Omite application. Although extensive records were kept on the pesticide application dates and dates of fieldworker entry, it was hard to ascertain in which vineyard the causal exposure had occurred because: (1) the fieldworkers moved from field to field so frequently, and (2) several different pesticides were present in many vineyards at any one time. In these cases, the pesticide involved was recorded as undetermined. For example, one crew involved in this episode of rashes consisted of 30 workers, 21 of whom developed rashes about the same time. These workers had turned canes in a vineyard which had been sprayed 6 days earlier with Omite (in addition to the regular sulfur applications), then moved to another field the next day which had been treated with Omite 2 days previously (in addition to the regular sulfur applications). It was at the end of the second day that the large percentage of this crew developed skin rashes. There were a total of 61 days of disability recorded for the entire group of 58 fieldworkers. The number of days of disability was not reported in some cases, so the total may have been higher. Twenty-six workers did report disability; ten of them losing from 1 to 6 days of work, and the remainder none. Our final determination for this series of episodes on this one ranching operation was that there were a total of 56 cases due to omite and sulfur exposure and that omite was a major factor in causing these incidents.

In order to reduce the number of repetitive narratives, 28 reports of skin injuries due to sulfur are grouped together here although they are unrelated in date of injury and location of worksite where injury occurred. In each case the worker was performing a task requiring contact with foliage treated previously (but on unspecified dates) with sulfur. Eleven of the injured complained of rashes all over their bodies. Fifteen others had rashes specifically on their hands, arms, backs, faces or feet in various combinations. Two workers developed rashes on their necks and the physician diagnosed their conditions "folliculitis". Eight others received the diagnosis "allergic dermatitis", while twelve were called "contact dermatitis", one had "dermatitis", four had "rashes" and the diagnosis on one worker was unreported. The number of workdays lost due to these illnesses was unreported although, in two cases, the physicians recommended 1 to 2 weeks off the job.

A man who was thinning grapevines eight days after they had been sprayed with sulphur developed a rash on both arms. (The re-entry interval for grapes treated with sulfur is 1 day). He had had much contact with treated foliage and it was a hot day. The physician diagnosed chemical dermatitis and prescribed medication. No workdays were lost.

A man turning grape canes that were treated during the same week with sulfur developed a rash on his chest, abdomen and arms. Omite had been applied the previous week. He worked shirtless. The physician diagnosed contact dermatitis and administered medication. No workdays were lost.

A woman developed a rash on her back after thinning grapevines which, (according to a 7-day rotation schedule), were treated with sulfur the previous day. Benlate (benomyl) was applied two weeks previously. The physician diagnosed allergic dermatitis and prescribed medication. No workdays were lost.

A man, turning cane in a vineyard treated with sulfur 3 weeks previously, developed a rash on his chest, arms and face. The physician diagnosed contact dermatitis and prescribed medication. No workdays were lost.

A man turning cane in a vineyard treated with sulfur 2 weeks previously, developed dermatitis. The physician prescribed medication. No workdays were lost.

A woman picking grapes treated previously on an unspecified date with sulfur developed dryness around the eyes, a sore throat and sores in her mouth. She ate some grapes while working. The physician diagnosed "contact dermatitis" and the number of lost workdays, if any, was unreported.

A foreman on a grape-picking crew working in a field treated previously (on an unspecified date) with captan and sulfur, developed a rash all over his body. The physician diagnosed it as dermatitis and no workdays were lost.

A man developed a rash on both arms and legs after turning cane in a vineyard treated with benomyl seven days previously and sulfur on an unspecified date. Sulfur was reportedly applied every 7-10 days. The physician diagnosed the illness as mild contact dermatitis secondary to sulfur and weeds. The number of workdays lost, if any, was unreported.

A woman who was picking grapes that were treated with Botran (CDNA), captan and sulfur nine days previously, developed a rash on her neck and arm. The physician diagnosed it as allergic dermatitis. The number of workdays lost, if any, were unreported.

A man picking grapes that were treated with captan and sulfur a month earlier developed a fine rash all over his body. The physician diagnosed it as allergic dermatitis. Workdays lost due to this illness, if any, were unreported.

A man turning canes in a vineyard that had been treated with sulfur earlier in the week and Omite (propargite) the previous week developed a rash on his arms, chest and stomach. The physician diagnosed it as contact dermatitis. Lost workdays, if any, were unreported.

A man who was picking grapes that had been treated with Captan and sulfur 33 days earlier developed a fine rash over his entire body. The physician diagnosed it as alergic dermatitis and lost workways, if any, were unreported.

A man picking grapes in a field treated with captan and sulfur 41 days previously developed a fine rash over his body. The physician diagnosed it as allergic dermatitis. Workdays lost, if any, due to this injury were unreported.

A women picking grapes that had been treated with captan and sulfur 25 days earlier developed a rash on an unspecified area of the body. The physician diagnosed allergic dermatitis. Lost workdays, if any, were unreported.

A woman picking grapes that had been treated with captan and sulfur 16 days previously, developed a rash on an unspecified area of the body. The physician diagnosed dermatitis. Lost workdays, if any, were unreported.

While leafing in a field treated previously (on an unspecified date) with sulfur a man developed a rash on his entire body. The physician diagnosed it as contact dermatitis. No workdays were lost.

A woman who was tipping grapes in a field that had been treated every 7 to 10 days with sulfur (date of last application was not reported), developed a rash all over her body. The diagnosis was "probable contact dermatitis". No workdays were lost.

A woman thinning grapes in a vineyard that had been treated weekly with sulfur (exact application date unreported) developed a rash on her arm and neck. It was diagnosed by the physician as contact dermatitis. No workdays were lost.

A man working in grapevines that had been treated 1 to 7 days earlier with sulfur and 8 days earlier with Omite developed a rash on both arms. It was diagnosed as chemical dermatitis and no workdays were lost.

A woman working in a vineyard that was treated weekly (but the date of application was unreported) with sulfur complained of a stuffy nose, swollen eyes, and itchy skin. The physician diagnosed it as allergic rhinitis. No workdays were lost.

A man picking grapes in a field treated two weeks earlier with sulfur and 6 weeks earlier with Omite, developed a rash on his hands. Contact dermatitis was diagnosed. Lost workdays, if any, were unreported.

A woman pulling leaves in a vineyard that had been treated with sulfur 13 days earlier developed a rash generalized throughout her body. The physician diagnosed it as allergic dermatitis. One workday was lost.

A woman harvesting grapes in a vineyard that had been treated with sulfur 11 days earlier developed a rash on her feet, leg, arms and hands. The physician diagnosed allergic and chemical dermatitis. The number of workdays lost, if any, was unreported.

A woman harvesting grapes in a vineyard that had been treated with Captan and sulfur nine days earlier developed a rash on her arms, face and body. The diagnosis was dermatitis. The number of lost workdays, if any, was unreported.

A man harvesting grapes in a vineyard that had been treated with sulfur 2 weeks earlier developed welts on his arms and chest and abdomen. The physician diagnosed it as allergic dermatitis. No workdays were lost.

A woman picking grapes in a field treated 10 weeks earlier with sulfur and 11 weeks earlier with captan, Botran, and sulfur, developed a rash over most of her body. The physician diagnosed it as allergic rash. The number of lost workdays, if any, was unreported.

A woman who was picking grapes in a field treated with sulfur 2 weeks earlier developed a rash on unspecified areas of her body. The physician's diagnosis was allergic dermatitis. She lost 5 working days due to this illness.

In order to reduce the number of repetitive narratives eight cases of skin injuries are grouped together here. In each case the worker was performing a task requiring contact with foliage, other than grapes, which had been previously treated with sulfur on an unspecified date. Four workers experienced generalized rashes over their bodies. Two had rashes on their arms only; another had a rash on his legs and back. The physicians diagnosed contact dermatitis for 4 of the patients. One had the diagnosis "rash", one was diagnosed "dermatitis", and the other 2 were listed as "allergic dermatitis." Six workers lost no workdays due to their illnesses, one lost one workday and one lost 6 workdays.

A fieldworker entered a vineyard to trim the grapevines several hours after an aerial application of sulfur was made. At the end of the day the worker informed his supervisor that his arms itched, and 2 days later his face began to swell. He saw a physician about 10 days later, who diagnosed the skin irritation as chemical dermititis. The worker was treated with a salve and release. No workdays were lost.

A worker picking grapes experienced a rash on her back. The vineyard she was working in had previously been treated with dusting sulfur. A physician diagnosed the rash to be allergic dermititis and treated her with a lotion. No days of disability were incurred.

A fieldworker developed a rash on his arms and hands after picking strawberries in a field recently sprayed with Thiolux (sulfur). The pesticide applications were made both the day before and the day of the worker's entry into the field. A physician diagnosed the rash as an allergic reaction and treated him with Kenelog cream and Termaril. The worker missed no workdays.

A fieldworker developed a rash on his abdomen and arms after turning grape canes in a vineyard. Sulfur and Omite (propargite) applications had been made to this field approximately 1 week prior to the fieldworker's entry. A physician diagnosed the rash as contact dermatitis secondary to sulfur and Omite. He was treated with an injection and a skin cream and then was released. He missed 2 days of work.

A fieldworker experienced a rash after suckering vines in a vineyard. Records indicate that sulfur dust was applied 1 day prior to the fieldworker's entry. A physician diagnosed his irritation as an antecubital rash secondary to a sulfur burn and perspiration. He missed no days of work.

A fieldworker experienced irritation around his eyes while thinning grapes in a vineyard that had been treated with sulfur dust several days earlier. A physician diagnosed the injury as blepharitis, then treated and released him. The worker missed 1 day of work.

A fieldworker, after turning canes in a vineyard, experienced a chemical burn. The vineyard had been treated with Benlate 5 days prior to his entry; in addition, dusting sulfur was applied every 7-10 days. A physician diagnosed his injury as a second degree chemical burn. The fieldworker lost no workdays.

A field worker developed a rash after thinning leaves in a vineyard that had been treated 11 days earlier with Omite and sulfur. She was sent to a dermatologist who made skin tests and determined that she was not allergic to Omite, sulfur, or grape leaves. her condition was treated with steroids, antibiotics and skin lotion. No workdays were lost.

A worker developed a rash on both arms after working in a field that had been treated with Omite and Kryocide (cryolite) at an undetermined earlier date. A physician diagnosed the condition as allergic dermatitis and treated it with a steriod injection and hydrocortisone cream. The number of workdays lost, if any, was unspecified.

After counting bunches of grapes in a vineyard that had been treated 20 days earlier with Omite and sulfur, a worker developed a rash. She sought medical attention and her condition was diagnosed as contact dermatitis. She was treated with an unidentified steroid compound. The number of workdays lost, if any, was unreported.

A field worker developed a rash after working in a vineyard that had been treated 13 days earlier with Omite and sulfur. She visited a physician and was treated with antihistamines. No workdays were lost.

After working in a vineyard that had been treated with Omite at an undetermined earlier date, a field worker developed a rash on his arms and stomach. He visited a physician who diagnosed the condition as contact dermatitis and was treated with a steroid compound. No workdays were lost.

A worker picking table grapes developed a rash on his arms and legs after working in a vineyard that had last been treated with Omite 78 days earlier. He sought medical attention and was treated with a steroid injection. No workdays were lost.

A field worker developed a rash after picking grapes in a vineyard that had last been treated with Botran and captan approximately one month earlier, and Omite and sulfer one week prior to that. She visited a physician who diagnosed the condition as chemical and allergic dermatitis and treated it

with a steroid injection, antihistamines, and topical cortisone cream. Four workdays were lost.

Three workers developed rashes after pruning and tying grapevines for 5 days in a vineyard that had been treated with Omite 15 days earlier. They all visited the same physician who diagnosed their conditions as allergic dermatitis and treated them with antihistamines and hydrocortisone cream. The amount of time lost from work, if any, was unspecified in each of the three cases.

A worker tipping grapes developed a rash after working in a vineyard that had last been treated with Omite and sulfur 17 days earlier. he sought medical attention and was treated with antihistamines and hydrocortisone cream. He was advised to take a week off from work, but declined to do so.

Three field workers developed rashes after pruning peach trees treated with Omite eight days earlier and plum trees treated with Plictran (the required re-entry interval was 24 hours) again ten days earlier. One of the three workers visited a physician who diagnosed the rash as chemical dermatitis and provided unspecified treatment. The other two workers visited a different physician who diagnosed their conditions as allergic dermatitis and treated one with a cortisone injection and the other in an unspecified fashion. One worker lost three workdays; the other two lost an undetermined number.

A worker pruning peach and plum trees in orchards that had been treated with Plictran eight days earlier (required re-entry interval is 24 hours) developed a rash. She visited a physician who diagnosed it as allergic dermatitis and treated it with an unspecified injection. Disability time, if any, was unspecified.

After picking nectarines in an orchard that had been treated with Plictran 19 days earlier, (required re-entry interval is 24 hours) a field worker developed a rash on her arms. A physician diagnosed the condition as contact dermatitis and treated it with antihistamines and cortisone cream. No workdays were lost.

A field worker developed a rash after digging up tree roses that had been treated with acephate (Orthene) at an unspecified earlier date. He visited a physician who treated him with an anti-inflammatory compound. No workdays were lost.

A worker pruning grapes developed a rash on her face and arms. The field had last been treated over one month earlier with Botran (DCNA). She visited a physician who treated the rash with an anti-infammatory compound injection and topical creams. No workdays were lost.

A field worker developed a rash on his arms after picking peaches in an orchard that had been treated with benomyl (Benlate) three weeks earlier. The rash lasted four days and did not recur for the approximately four months that the worker spent picking stone fruit. Several months after the incident the worker visited a physician for an unrelated health problem and

told him about the rash. The physician prescribed a hydrocortisone cream for any future re-occurrences. At the time of the occurrence, none of the other pickers in a crew of 50 reported any problems. There were no days of work lost as result of this exposure.

Six days after a celery field was treated with benomyl (Benlate), methomyl (Lannate), mevinphos (Phosdrin), and Vydate, a crew of field workers entered the field to harvest the celery. One of the workers subsequently developed a rash on his left arm, stomach and left leg. He visited a physician who treated the rash with unspecified medications. Five workdays were lost.

A crew of approximately 30 workers entered a vineyard to thin grapes shortly after the vineyard had been sprayed with sulfur, and before it had dried. Several days later, one of the workers developed a rash on her face and irritated eyes. A physician diagnosed the conditions as allergic chemical dermatitis and chemical conjunctivitis, and prescribed unspecified medication. The employee lost four days of work. The re-entry interval for grapes treated with sulfur is 24 hours after application, and for any pesticide is at least the time it takes for the spray to dry or the dust to settle.

A field worker cutting flowers in a lily field treated with Dyrene on a semiweekly to weekly basis, developed a rash on her arms and eyelids. She was taken to a physician who diagnosed the condition as allergic dermatitis due to the pesticide, and treated her with unspecified medications. No workdays were lost.

A field worker harvesting figs developed a rash on one hand. The fig trees he had been working on had been treated with Kocide (copper hydroxide) the previous day. He sought medical attention and was diagnosed as having contact dermatitis and was advised to avoid contact with pesticides. Twenty-one days were lost from work.

A worker pruning trees in an orchard that had been treated with Morestan 42 days earlier developed a rash. He visited a physician who diagnosed the rash as allergic dermatitis and treated it with an injection of hydrocortisone and topical creams. No workdays were lost.

A field worker picking grapes developed a rash. The field he had been working in had been treated with Dibrom (Naled) one week ealier, and had been dusted with sulfur up to one month before harvest. The worker sought medical attention and was treated with Atarax. Three days were lost from work.

A field worker developed contact dermatitis after hoeing cotton in a field that had been treated with Comite. No other information is available except that no workdays were lost by the employee as a result of this exposure.

A worker counting bunches of grapes in a vineyard reported a burning sensation in his eyes. The vineyard had last been treated with Omite one month earlier. The worker visited a physician who treated him with eye drops. No workdays were lost.

After hoeing weeds a cotton field that had been treated with Comite 2 weeks earlier, a worker developed a rash on his arms and back. He visited a physician who diagnosed the condition as contact dermatitis and prescribed topical cortisone cream. No workdays were lost.

A worker was prunning plum and nectarine trees in orchards that had been treated with Plictran 6 days earlier. She developed a rash on her face and subsequently visited a physician, who treated her with an anti-inflammatory injection and topical cortisone cream. No workdays were lost.

A foreman working with a crew trimming and tying vines in a vineyard developed a rash on his forearms. The vineyard had been treated 2 days earlier with Omite. When the rash worsened he sought medical attention at a hospital emergency room and was diagnosed as having contact dermatitis. No workdays were lost.

A fieldworker developed a rash on his arms, neck, and chest after turning canes in a vineyard recently treated with sulfur. The sulfur application was made 6 days prior to the worker's entry. A physician diagnosed the rash as contact dermatitis. The worker lost no workdays.

A fieldworker turning cane in a vineyard that had been treated with Omite 17 days earlier developed a rash. He visited a physician who diagnosed the problem as a probable allergic reaction. No treatment was administered and the worker returned to work with workdays lost.

While picking peaches, a fieldworker experienced a rash. Records indicated that an application of sulfur and Benlate had been made to the orchard 3 days prior to the episode. A physician diagnosed the rash as occupational urticaria and treated him with Benadryl. The symptoms subsided the same day. Disability information was not reported.

A fieldworker turning cane in a vineyard developed a rash and began itching over a large portion of his body. The vineyard had been treated with Omite sometime in the previous month, but was treated with sulfur dust every 7 days. A physician diagnosed the rash as skin irritation secondary to pesticides. He was treated with Benadryl capsules and hydrocortizone cream and missed 14 days of work.

Two fieldworkers pulling grapeleaves in the same vineyard developed rashes on their arms and chest. The vineyard had been treated 8 days earlier with captan and sulfur dust. A physician diagnosed their rashes as contact dermatitis secondary to sulfur exposure. Neither worker lost any workdays.

A fieldworker developed a rash on her face after 3 days of picking grapes. She continued picking grapes for 2 more days before seeing a physician. The foreman of the crew she was working with indicated that the vineyard his crew was working in was heavily sulfured, and that there were other workers who suffered less serious rashes. Sulfur applications, however, ceased 10 days before picking began. The physician diagnosed her rash as contact dermtitis and prescribed Benadryl. Disability information was not reported.

A worker thinning grapes in a field treated with sulfur 4 days earlier developed a rash and welts on his arms. He saw a physician 3 days later who diagnosed his illness as a contact allergy to sulfur and treated him with epinephrine, Benedryl, and an ice pack. The fieldworker incurred 2 days disability.

A worker experienced a rash on his arms, neck and legs after tipping and thinning grape vines. The vineyard he was working in had been treated with sulfur approximately 1 week prior to his entry. He was examined by a physician who diagnosed his rash as allergic dermititis. The fieldworker inccurred no disability.

A woman experienced dermatitis after working in a lettuce field. The pesticide spray history was not available at the time of investigation, but the physician who saw her diagnosed the dermatitis as pesticide-related. No days of work were lost.

Six vineyard workers, in separate incidents, experienced contact dermatitis on their arms and legs after working in vineyards in the southern San Joaquin Valley. Information on pesticides applied to the vineyards is not available, but the attending physician attributed the rashes to pesticide exposure while working in the vineyards. It is not known if any workdays were lost due to these exposures.

Three farm workers, in separate incidents, experienced rashes while picking grapes. Pesticide use information on the vineyards involved is not available, but the physicians who saw these workers diagnosed their rashes as allergic dermatitis due to pesticide exposure in the vineyards. It is not known if any of these employees lost any workdays as a result of their rashes.

A woman who was tying canes and pulling leaves in a vineyard treated with sulfur reported having a rash on her stomach and arms. The date of applicaiton of the sulfur was not available at the time of investigation, so it could not be determined whether the 24 hour re-entry interval for sulfur was observed. The attending physician attributed the rash to contact dermatitis due to sulfur. No workdays were lost.

One of 75 workers in a crew reported a rash after hoeing weeds in a cotton field. No pesticide applications had been made in that field, but 2 adjacent fields were treated earlier that day with Comite. The attending physician diagnosed the rash as chemical dermatitis due to exposure to Comite. Worker disability in this incident was not specified.

A restaurant cook was picking peppers behind the restaurant. Someone else had treated the field with an unidentified insecticide, reportedly a "yellow dust". The cook developed a rash while handling the plants and peppers for 2 hours. The attending physician diagnosed the skin rash as being due to pesticide exposure. Disability, if any, was not reported.

A worker was thinning lettuce in a field treated several days earlier with Dithane M-22 (maneb). She had substantial foliage contact. After work, she began to itch. On the second day she reported to work and the symptoms

worsened. She visited a physician on the third day. The diagnosis was probable contact dermatitis and she was treated with Benadryl. She has since been reassigned to work in areas without Dithane. Disability information was not reported.

A worker was picking strawberries in a field which had been sprayed with Kelthane EC. The date of application was not available at the time of investigation. His hands swelled up and he developed a rash on both hands. He saw a physician on the sixth day of irritation. The diagnosis was dermatitis and he was treated with Kenalog cream. The worker has incurred 15 days of dissability and did not return to strawberry picking.

A worker entered a Diazinon-treated melon patch to check the size of the melons. During his inspection he had some contact with the fruit and leaves. The next day he developed a rash on his hands and arms. He was told by his employer that the field had been sprayed 2 or 3 days earlier. The physician diagnosed a skin rash and treated him with Kenalog cream and Prednisone. Disability information was not reported.

Two field workers picking strawberries in a field that had been treated 3 days earlier with Benlate and Captan 50W experienced rashes on their hands, arms, and feet. A physician treated one of the workers with topical steroids. The other worker's rash was described by the same physician as being erythrematiz with scaling and exudate about the hands, wrist and feet. She was treated with Triamcinolone 0.1 percent cream. Neither worker missed any workdays.

A worker was picking strawberries in a field treated 14 days earlier with Benlate and Captan. While at work, he had a bowel movement and had touched his rectal area with hands contaminated with powder from the strawberry foliage. On returning home, he developed a marked itching of this buttocks and rectum. He went to a physician the next day. The physician diagnosed contact dermatitis of the buttocks and treated with Kenalog cream 1/4 percent and Periactin 4mg. No disability was incurred.

A worker was picking peaches in a grove previously treated with Benlate. He developed a rash over a large portion of his body which was diagnosed by a physician as possibly due to pesticide exposure. His rash was washed and treated with Benadryl. The worker did not miss any workdays.

A fieldworker developed a rash after thinning grapes for two consecutive days. The vineyard he was working in had been treated with sulfur, Omite and Kryocide, 5 days prior to his entry. A physician diagnosed the injury as a rash on the arms, chest, and stomach secondary to pesticide exposure. He was treated with Benadryl and released. Disability information was not specified.

A fieldworker, working in a field not recently treated with a pesticide--but adjacent to a tomato field that had been treated with dusting sulfur, Nudrin, and Toxaphene--began experiencing a rash. Several days later he began working in the tomato field and his rash worsened, spreading to both his arms and legs. The interval between the applications and entry into the field was approximately 1 week; however, no specific date of

application was reported. A physician diagnosed the rash as dermatitis, probably due to Toxaphene, treated him with a steroid cream and Benadryl. The worker was assigned to work in untreated crops and missed no workdays.

A fieldworker experienced burning eyes after working in a cotton field. Pesticide application records indicated that Azodrin (monocroptophos) had been applied to that field 3 weeks prior to the fieldworker's entry. A physician diagnosed his eye irritation as conjunctivitis. Workdays lost were not reported.

A fieldworker developed a rash on his arms after turning canes in a vineyard. The date the fieldworker was turning canes could not be verified, and was either 2 days or 10 days after an Omite application was made. A physician diagnosed the rash as contact dermatitis then treated him with Celestone and advised him to eliminate his exposure to pesticides. He missed no workdays.

DISCUSSION

There were 260 illnesses and injuries to farm field workers due to occupational exposure to pesticides in 1980 reported by California's physicians. This total is a marked increase over the number reported in previous years (53 in 1979). The greatest increase was seen in the number of skin injuries, primarily rashes, associated with fungicides used on grapes. Of the 260 total cases, 160 (or over 60 percent) were associated with exposure to sulfur. Seventy-five of the skin injury cases were associated with exposure to Omite. Most of the incidents occurred in vineyards treated with both sulfur and Omite. Sulfur is a heavily used fungicide on grapes and other fruit crops in California. Weather conditions were such in 1980 that heavy use of both Omite and sulfur on grapes was considered necessary in 1980. It is estimated that there were over 76 million pounds of sulfur and over 1 million pounds of propargite (the active ingredient in Omite) sold in California in 1980. Contact with Omite is widely known to cause skin irritation; this effect is aggravated by hot, sweaty working conditions, and by the presence of dust, dirt, and other pesticide chemicals such as sulfur. The re-entry interval for vineyards treated with sulfur is 1 day; this was complied with in nearly all of the cases reported. In order to decrease employee exposure to Omite 30W, the registrant voluntarily agreed, in 1981, to specify a 7-day re-entry interval when used on grapes. It appears that a longer safety interval for sulfur may also be needed.

Field monitoring studies conducted by the Worker Health and Safety Unit in 1975 through 1980 indicated a high level of compliance by growers with preharvest and re-entry intervals.

Previous investigations conducted following worker injuries to sulfur have shown, however, that this 1 day interval is observed as a "nest day" interval, rather than the 24 hours required before workers may enter a treated vineyard to "engage in substantial and prolonged body contact with the plants." These intervals are extremely important in assuring field workers of a healthful work environment by allowing ample time for the pesticide chemicals to breakdown into non-toxic end products. Table 5

summarizes the re-entry intervals specified by regulation in California that apply to incidents described above. For pesticides that are not in Table 5, but were involved in field worker incidents in 1980, the regulations specify that the pesticide spray must be dry or the dust settled before worker re-entry can occur. (Please note that Table 5 is not a complete list of all the safety intervals specified by regulation, but only those that applied to the incidents described in this report during 1980.)

As shown on Table 1, there were 53 suspected systemic illnesses, 24 eye injuries, and 183 skin injuries to field workers exposed to pesticide residues in 1980. Systemic illnesses are generally the severe illnesses, and those where greatest educational and regulatory effort has been applied in recent years in an attempt to reduce them. Of the 53 suspected systemic cases, 44 of them were involved in 2 incidents. There were 22 employees working in a cauliflower field treated with mevinphos and phosphamidon before the re-entry interval had expired. This incident was caused by faulty communications between the grower and labor contractor and it could have been prevented. A heavy fine was imposed on the grower. In the other incident, 22 workers in a peach orchard displayed cholinergic signs and symptoms. The orchard had been treated 21 days earlier with Guthion and the 14 day re-entry interval had elapsed. Most of the 24 eye injuries and 183 skin injuries were associated with dermal exposure to dislodgeable residues of fungicides -- primarily sulfur but including Benlate, captan, and maneb -- and miticides -- such as Plictran, Omite, and Comite.

The number of days of disability experienced by field workers as a result of their exposure to pesticides reflects the minor nature of most of the illnesses and injuries reported. Table 2 summarizes the number of persons missing days of work due to their exposures. There was a reported total of 256 days lost from work. It should be noted that occupational illness or injury of any kind results in lost work time, even if the employee is only taken to be examined by a physician and then returns to work. Often times an employee will miss the remainder of the work day due to the illness. This time is not reflected by disability data.

There were only 8 persons hospitalized for a total of 13 days (Table 3). This again, demonstrates the minor nature of most of the field worker cases, and the relative ease with which most of the cases can be treated.

Table 1

Occupational Illnesses and Injuries of Fieldworkers
Exposed to pesticide Residue in 1980
Reported by Type of Illness and Pesticide

TOTAL - 260

Suspected Systemic Illness - 53

Guthion	23	Azodrin	1
Mevinphos and Phosphamidon	22	Mevinphos	1
Sulfur	2	Unspecified	2
Parathion	2		

Eye Injuries - 24

Sulfur	19	Sodium polysulfide	1
Omite	2	Unspecified	1
Dibrom	1		

Skin Injuries - 183

Omite and sulfur	66	Diazinon	1
Sulfur	60	Dibrom	1
Captan and sulfur	10	Dyrene	1
Omite	9	Kelthane	1
Benlate	3	Kocide	1
Benlate and sulfur	3	Maneb	1
Benlate and captan	3	Morestan	1
Comite	3	Orthene	1
Plictran	3	Toxaphene	1
Botran	2	Unspecified	11
Azodrin	1		

Table 2

Days of Disability Resulting From Occupational
Exposure to Pesticide Residues in 1980

Days of Disability	Injury Type		
	Systemic	Eye	Skin
None	43	12	68
1-3	6	5	13
4-6	-	-	8
7-14	4	-	4
21	-	-	1
Unspecified	-	7	89
Total	53	24	183

Table 3

Days of Hospitalization of Field Workers
Exposed to Pesticide Residues in 1980

Days of Hospitalization	Systemic	Eye	Skin
1	5	-	-
2	2	-	-
4	1	-	-
None	45	24	183
Total	53	24	183

Table 4

Occupational Illnesses and Injuried to Field Workers
in 1980 Reported by County of Occurrence

	Systemic	Eye	Skin	Total
Fresno	-	4	8	12
Humbolt	-	-	1	1
Imperial	1	1	1	3
Kern	2	10	136	148
Kings	-	-	1	1
Madera	-	-	9	9
Merced	-	1	-	1
Monterey	22	1	4	27
Napa	2	1	-	3
Riverside	-	1	1	2
San Joaquin	-	-	2	2
Stanislaus	23	1	2	26
Sutter	1	-	-	1
Tulare	2	2	16	20
Ventura	-	-	2	2
Yuba	-	2	-	2
Total	53	24	183	260

Table 5

Re-entry Intervals (in days after application)
Specified by Regulation in the Agriculture Code for Certain
Crops Treated With Certain Pesticides

	Apples	Peaches & Nectarines	Grapes	Any Other Crop (Except Citrus)**
Azinphos-methyl	14	14	21	1
Azodrin	-	-	-	1
Diazinon	-	5	5	SD/DS
Methomyl	2	2	2	1
Mevinphos	-	4	4	2
Naled (Dibrom)	-	1	1	1
Omite	1	1	1*	1
Parathion	14	21	21	2
Sulfur	-	1	1	SD/DS

SD/DS - Spray dry or dust settled

* In effect in 1980 (see discussion).

** And unless a longer interval is specified on the pesticide product label.