



## AGRICULTURAL WORKER OCCUPATIONAL HEALTH & SAFETY

According to a 2015 report of the Bureau of Labor Statistics of the U.S. Department of Labor, agriculture remains one of the most dangerous industries in the United States with the highest incidence of fatal workplace injuries.<sup>1</sup> Farmworkers face workplace hazards similar to those found in other industrial settings, such as working with heavy machinery and hard physical labor. They also face unique occupational hazards specific to farm work, including pesticide exposure, skin disorders, infectious diseases, respiratory problems, hearing and vision disorders, and musculoskeletal injuries. The following is a compilation of recent facts and figures pertaining to the occupational health and safety of farmworkers.

### General Information

- In 2015, there were 570 fatal occupational injuries within the agricultural industry, and, agriculture had the highest rate of fatal occupational injuries: 22.8 fatal injuries for every 100,000 full-time workers.<sup>1</sup>
- The agricultural industry also has a high number of cases involving nonfatal occupational injury and illness that required either time off from work or job transfer and restriction. Over 18,000 injuries and illnesses resulting in time away from work occurred in 2015 in the agriculture, forestry, and fishing industry, resulting in an incidence rate of 189 injuries and illnesses per 10,000 full-time workers compared to 104 per 10,000 in all industries.<sup>2</sup>
- Children in agriculture are also at great risk: the U.S. Department of Agriculture released a report in 2009 that recorded 15,876 injuries to youths under 20 years of age who lived, worked or visited a farm.<sup>4</sup> The following data for 2009 was also noted:
  - Fifty-eight percent of youth injuries were incurred by males
  - Youth ages 10 to 15 incurred the highest number of injuries at 6,912
  - Youths under age 10 incurred 4,111 injuries
  - Youths ages 16 to 19 incurred 4,148 injuries<sup>5</sup>
- Every day, about 100 agricultural workers suffer lost-work-time injuries, and an estimated half of injuries among crop production workers are classified as strains or sprains.<sup>3</sup>
- According to the National Agricultural Workers Survey 2013-2014, 4% of agricultural worker respondents reported experiencing a workplace injury in the past 12 months, and 17% reported experiencing musculoskeletal pain or discomfort.<sup>4,5</sup>

## Pesticide Exposure

- Today, agricultural workers are exposed to “non-persistent” pesticides which are metabolized by the body within days. They may enter the body through ingestion and inhalation, but they are primarily absorbed through the skin.<sup>6</sup>
- During their daily work, agricultural workers are often exposed to pesticides, which include substances that prevent, destroy or repel pests. The term pesticide also encompasses herbicides, fungicides, and various other substances used to control pests. Some pesticides can cause harm to human health.<sup>7,8</sup>
- Agricultural workers frequently encounter pesticides through direct contact with the chemicals, contact with pesticide residue on treated crops or equipment, and drift of pesticides into untreated areas.<sup>9</sup>
- Several studies also prove that entire families are at risk to pesticide exposure because of drift from nearby areas, not providing enough hand-washing or bathroom facilities, and bringing home work clothes that have been contaminated.<sup>3,6,10</sup>
- The Pesticide Safety Education Program of Cornell University states that mild symptoms of poisoning include headache, fatigue, dizziness, nervousness, perspiration, loss of appetite, thirst, eye irritation and irritation of the nose and throat. Severe poisoning symptoms include fever, intense thirst, vomiting, muscle twitches, convulsions, inability to breathe and unconsciousness.<sup>9</sup>
- Exposure to large doses of a pesticide can lead to severe effects such as loss of consciousness, coma and even death.<sup>6</sup>
- Lifetime exposure to pesticides is significantly greater for Latino immigrant agricultural workers as compared to other Latino immigrant workers. Among agricultural workers, higher education levels and possessing an H-2A visa were associated with lower lifetime exposure levels to pesticides.<sup>12</sup>
- Pesticide safety regulations that exist include:
  - the *Worker Protection Standard*, which states that field workers must be trained on pesticide use, and
  - the *Occupation Safety and Health Act*, which requires employers with 11 or more employees to provide drinking, toilet and washing facilities for agricultural workers while they work in the fields.<sup>12</sup>
- A study conducted in eastern North Carolina surveyed 300 agricultural workers regarding pesticide safety and training. They reported the following:
  - 75.3% had water available for hand-washing, but only 44.3% were provided soap,
  - 51.3% were told when it was safe to enter fields after applying,
  - 51% were told when pesticides were applied,
  - 34.8% reported being provided pesticide safety instruction by a supervisor,
  - 28% percent worked in areas adjacent to fields where pesticides were being applied,
  - 25.2% were asked to enter fields before it was safe to do so,
  - 16% worked in fields while pesticides were being applied, and
  - 14.8% were provided with pesticide safety equipment.<sup>13</sup>

- Another pesticide danger for agricultural workers is the limited information they are provided about the pesticides they are being exposed to. They may not be told what types of pesticides are being used at any given time, they may have little control over exposure, and they often live in grower-provided housing and do not know the severity of exposure in these dwellings.<sup>6</sup>
- One other challenge is that growers rarely speak the same languages as workers. Growers often do not recognize or understand how linguistic, cultural and power differences create barriers for farmworker pesticide safety.<sup>6</sup>

### **Heat and Sun Exposure**

- Agricultural workers are at increased risk for heat-related illnesses due to the nature of farm work: they work outdoors in direct sunlight, humidity levels are often higher in the fields, they generate large amounts of body heat, and they often use heavy work clothing and equipment.<sup>14</sup>
- Heat stress occurs when the body temperature increases, and the body fails to regulate its temperature. This condition can lead to dehydration, electrolyte imbalance, neurological impairment, multi-organ failure, and death.<sup>15</sup>
- A study published in 2008 found that from 1992-2006, 423 workers in agriculture and non-agricultural industries died from heat exposure. Results indicated that 68 (16%) of those fatalities were crop workers employed in the crop production or support activities for crop production sectors.<sup>16</sup>
- In a study conducted with 300 agricultural workers in North Carolina, 94 percent of respondents reported that they work in extreme heat, and 40 percent reported having had symptoms of heat illness.<sup>17</sup>
- Research conducted in Georgia with more than 400 agricultural workers found that over a third of workers reported experiencing three or more symptoms of a heat-related illness in the past week, and that 34% did not have access to regular rest breaks during the work day, and 27% did not have access to shade.<sup>18</sup>
- Workplace heat stress can be exacerbated by the poor housing conditions of many agricultural workers. A survey of housing units in 170 agricultural worker camps found that more than half lacked air conditioning in the home, and that the heat index inside the homes was often high.<sup>19</sup>
- An added danger for agricultural workers is that pesticides are absorbed more quickly through hot, sweaty skin than through cool skin.<sup>20</sup>

### **Hazardous Tools and Machinery**

- According to the Occupational Injury Surveillance of Production Agriculture Survey for non-fatal injuries, 9% of injuries among adult agricultural workers were due to machinery, and 11% were due to tools and equipment, and 23% were due to vehicles.<sup>14</sup>
- According to the Bureau of Labor Statistic 2015 data, the leading causes of fatal workplace injuries among crop production workers were:
  - Transportation incidents: 120 fatal incidents (includes injuries resulting from the use of tractors, being struck by a vehicle, etc.)
  - Contact with objects and equipment: 66 fatal incidents
  - Falls, slips, and trips: 16 fatal incidents<sup>21</sup>

## Musculoskeletal Injuries

- Because farm labor consists of constant bending, twisting, carrying heavy items, and repetitive motions during long work hours, agricultural workers often experience musculoskeletal injuries. Furthermore, workers are often paid piece-rate, which provides an incentive to work at high speed and to skip recommended breaks.<sup>22</sup>
- Research conducted with agricultural workers aged 40 years and over near the U.S.-Mexico border found that 68% experienced persistent musculoskeletal pain, but less than 25% received medical treatment.<sup>23</sup>
- Thirty-five percent of agricultural workers in North Carolina reported experiencing musculoskeletal pain, with the most common issues being epicondylitis, rotator cuff syndrome, and lower back pain. However, the agricultural workers had a lower prevalence of musculoskeletal issues as compared to the non-agricultural worker comparison group of Latino immigrants.<sup>24</sup>
- Among 87 agricultural workers aged 10-17 years, 54% reported experiencing musculoskeletal pain during the past 12 months.<sup>25</sup>
- Musculoskeletal pain has been found to be associated with higher levels of depressive symptoms among agricultural workers in North Carolina.<sup>18</sup>

## Respiratory Illnesses

- Because agricultural work takes place in rural areas, farmworkers are exposed to organic and mineral dusts, animal and plant dusts, toxic gases, molds and other respiratory irritants.<sup>26</sup> All of these have been associated with respiratory illnesses, such as asthma and chronic bronchitis.<sup>27</sup>
- Another chronic respiratory illness of concern is Farmer's Lung, a noninfectious allergic disease caused by inhaling mold spores. These mold spores accumulate and settle in the lower lungs, which interferes with their ability to exchange gas. As a last defense, the body develops an allergic reaction that causes cold or pneumonia symptoms.<sup>28</sup>
- Agricultural workers have a significantly higher death rate for a number of respiratory conditions, including hypersensitivity pneumonitis (proportionate mortality more than 10 times higher than expected), asthma, bronchitis, histoplasmosis, tuberculosis, pneumonia, and influenza.<sup>29</sup>
- Research conducted with over 700 agricultural workers in California found that the number of years worked in agriculture was associated with an increased risk for asthma.<sup>30</sup>
- A survey of workers on horse farms found that half of workers had lower respiratory symptoms, and that female workers and workers with a lower level of English speaking ability were at greater risk for experiencing symptoms of a respiratory illness.<sup>31</sup>
- Agricultural workers who work in the following tasks are at increased risk of respiratory illnesses:
  - Dusty fields and buildings;
  - Handling of hay;
  - Feeding or working with feedstuffs;

- Working in corn silage;
- Cleaning silos or grain bins;
- Working around bird droppings or dust from animal hair, fur, or feathers;
- Working around fishmeal; and
- Applying agricultural chemicals such as fertilizers and pesticides.<sup>28</sup>

### **Skin Disorders**

- Agricultural workers are exposed to many occupational and environmental risk factors that result in skin disease: weather, mechanical devices, chemicals, plant toxins, organic and inorganic dust and fungi.<sup>32</sup>
- A study conducted in North Carolina which interviewed 304 Latino agricultural workers on skin conditions concluded that although skin conditions were observed, agricultural workers turn to self-treatment as opposed to health care visits. The study reported that 63 percent used non-prescription preparations, 9 percent used prescription products and 6 percent used home remedies to cure skin ailments.<sup>32</sup>
- Among female nursery workers in Florida, 37% reported experiencing a rash on one or more areas of their bodies, and pregnant workers were more than four times more likely to experience a rash that covered more than 30% of their body surface area.<sup>33</sup>
- Another study conducted in North Carolina recorded the most commonly occurring skin problems and symptoms among agricultural workers. The following, along with their frequency, was reported:
  - Skin fungus had a rate of 58.6 percent
  - Sunburn had a rate of 58.6 percent
  - Bumps, pimples, or acne had a rate of 48.4 percent
  - Calluses had a rate of 48.4 percent
  - Itching had a rate of 46.1 percent
  - Rash had a rate of 42.8 percent.<sup>34</sup>

### **Eye Injuries**

- Agricultural work, by its nature, poses specific risks for eye injury. Some of these include different chemicals (pesticides, growth enhancers and fertilizers, tools and machinery.<sup>35</sup> Likewise, environmental factors also pose a risk due to exposure to hazards such as ultraviolet light, airborne soil, particulates, pollen, humidity and plant components.<sup>35</sup>
- These environmental objects are known to cause infections, allergic reactions, eye irritations, and corneal and other eye trauma. Chronic irritation and sun can cause cataracts, a clouding of the eye lens, and pterygium, a growth that obstructs the cornea.<sup>36</sup>
- A cross-sectional study of nearly 300 agricultural workers found that 75% reported never having a vision screening, and that approximately 1 in 10 had uncorrected moderate to severe visual impairment.<sup>37</sup>
- A more recent survey of agricultural workers in North Carolina found an incidence rate of 23.8 eye injuries per 10,000 worker years compared to the national incidence of 6.9 eye injuries per 10,000 worker years.<sup>35</sup>

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