



**RESEARCH**



# FATAL ELECTRICAL INJURIES OF CONTRACT WORKERS

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# BACKGROUND

Since 2011, the U.S. Bureau of Labor Statistics (BLS) has collected data on fatal work injuries of contract workers as part of its annual Census of Fatal Occupational Injuries (CFOI). The attention to contract worker deaths has coincided with a rise in the employment of contract workers and various temporary work arrangements more generally, in turn, prompting questions about health and safety programs and practices for this workforce.

This report draws on CFOI data to examine fatal electrical injuries of contract workers over the five-year period from 2012 through 2016. Electrical hazards are present in a variety of work environments, but their danger may not always be recognized by employees, particularly those working in unfamiliar work settings or who lack electrical safety training. Information about how these deaths occur is useful for prevention activities and for clarifying who these workers are and where additional electrical safety training and education efforts are needed.

In addition to the CFOI data, our report also includes descriptions of fatal electrical injury incidents involving contract workers from fatality investigation summaries conducted by the Occupational Safety and Health Administration (OSHA). By illustrating specific injury events, these summaries offer brief case studies of some of the factors that may influence injury occurrence and can act as a guide for education and prevention.



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## WHO IS A CONTRACTED WORKER?

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CFOI defines a contracted worker as “a worker employed by one firm but working at the behest of another firm that exercises overall responsibility for the operations at the site where the decedent was killed.” In addition, CFOI’s rules for inclusion require the existence of a business-to-business relationship to establish contracted worker status, exclude deaths at sites in which the contracting firm does not have overall site responsibility (such as a public roadway), and exclude suicides or other intentional incidents by the victim.

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## TYPES OF ELECTRICAL INJURY INCIDENTS

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Workplace injuries reported in CFOI are coded in accordance with the Occupational Injury and Illness Classification System (OIICS), first developed and released by BLS in 1992, with the most recent changes codified by OIICS 2.01, released by BLS in 2012. OIICS includes data elements for nature of injury or illness, part of body affected, source of injury or illness, secondary source of injury or illness, and injury event or exposure.

In OIICS 2.01, electrical injuries are identified at the most general level by the injury event code titled “Exposure to electricity,” followed by breakdowns according to “Direct exposure to electricity,” “Indirect exposure to electricity,” and “Exposure to electricity, unspecified.” Direct and indirect exposure to electricity are each further broken down by voltage exposures of 220 volts or less, greater than 220 volts, and unspecified voltage.

It should be understood that “exposure to electricity” is an inclusive code that includes not only the types of incidents typically associated with electrical work, such as contact with electrified machinery or equipment, but also includes lightning strikes, contact with electrical fences, or other electrical events. Injuries resulting from contact with power lines are also included. “Direct exposure to electricity” is defined as direct contact with a power source, such as touching a live electrical wire or coming into contact with an electrical arc. “Indirect exposure to electricity,” in turn,

refers to injuries resulting from contact with water, pipes, or some other material that is unintentionally conducting electricity. Workers who are electrocuted when carrying ladders that contact power lines are an example of fatal injuries from indirect exposure to electricity.

There are certain types of injuries stemming from exposure to electricity that will nevertheless be difficult to capture through the OIICS coding structure. For instance, falls that are precipitated by an electrical shock, as when a worker falls from a ladder after touching a live wire, will be coded under the injury event, “Falls, slips, trips.” An additional limitation of the coding structure is that the “Exposure to electricity” code does not allow a clear distinction between injuries due to electric shock and those due to arc flash.

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## RESEARCH METHODS

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This research utilizes a number of CFOI data elements that are crucial for injury surveillance, including employee status (wage and salary versus self-employed), employee’s country of origin, age of victim, type of exposure to electricity (direct or indirect), primary source of injury, worker activity, injury location, occupation, industry of employer, and contracting industry (industry of the firm that contracts the employer).

The analysis in this report uses data of fatal injuries of contract workers due to exposure to electricity from 2012 – 2016, the most recent five-year period for which data are available. The annual totals for the requested data variables and their constituent categories were summed to produce five-year totals. CFOI does not report data for injury categories that do not meet publication criteria. When categories did not include data for one or two years of the five-year period, data was summed for the remaining years and the number of years of missing data was noted in tables. Data missing from three or more years was assigned to an “other or unknown” category.

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## CONTRACTOR ELECTRICAL SAFETY: JOINT RESPONSIBILITY

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Growth in the employment of contract workers and workers in temporary work situations in recent years has raised questions about who bears responsibility for the safety of contract workers in nonpermanent worksites -- the employer or contractor. Guidance from the U.S. Occupational Safety and Health Administration (OSHA) pertaining to temporary workers indicates that host employers and contracting agencies are considered joint employers who each bear responsibility for statutory and regulatory requirements, with the obligations of each potentially varying according to working conditions or as clarified by agreement or contract. Host employers -- those who hire the contracting agency -- are seen to have primary responsibility for identifying hazards in the workplace and complying with pertinent health and safety requirements, while the contracting agencies have an obligation to ensure that they are not placing workers into hazardous environments for which they lack adequate training or are not adequately protected. Similarly, contracting agencies may assume responsibility for general health and safety training, while host employers provide training for the particular hazards in the host's workplace.

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## CONTRACT ELECTRICIAN INJURED IN ARC FLASH

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The Occupational Safety and Health Administration (OSHA) fined a Georgia utility company for several violations of the Occupational Safety and Health Act following an investigation of an arc flash incident that resulted in severe injuries to a contract employee. News reports indicate that in October, 2015, a contract electrician was performing maintenance work in a still-energized electrical cabinet at a power plant when the arc flash occurred. OSHA reported that the employee suffered second and third-degree burns to his hands, arms, and torso.

The contracting company was cited for failing to verify that machinery was powered down before allowing work to begin and failing to develop and issue procedural steps to power down machinery and prevent start-up during maintenance and servicing.

### Additional violations included:

- failing to coordinate with the contract employer work rules and procedures to ensure employees were protected from electrical hazards while performing work on the electrical cabinet,
- failing to exchange information with the contracting employer on lockout and tagout programs and energy control policies and procedures and to inform personnel of restrictions and prohibitions of energy control procedures,
- failing to develop and document and apply procedures to ensure the control of all sources of potentially hazardous energy,
- failing to include specific techniques for checking and verifying the absence of voltage in electrical equipment and for hanging temporary grounding cables,
- failing to have a tagout program with a level of safety equivalent to a lockout program,
- failing to provide each exposed employee with a level of protection from electrical hazards equivalent to a personal lock,
- failing to provide a mechanism for all employees to view and verify energy source isolation points, and
- failing to ensure that employees used a live-line tool or equivalent personal protective equipment when attaching a personal protective grounding cable to previously energized equipment.

The contract employer was cited for failing to coordinate with the host employer the specific requirements of specific lockout or tagout procedures and ensuring that personnel understood and complied with energy control procedures, failing to ensure that its employees were instructed in the hazardous conditions relevant to their work, and failing to ensure that employees had a clearance procedure that afforded protection equivalent to a personal lock to protect against electrical hazards.

For their respective violations, the contractor faced initial proposed penalties of \$112,780 and employer faced initial proposed penalties of \$10,780.

Source: [U.S. Department of Labor, Occupational Safety and Health Administration.](#)

# FATAL ELECTRICAL INJURIES OF CONTRACT WORKERS: 2012 - 2016

Data from the Census of Fatal Occupational Injuries indicates that a total of 325 contract workers died as a result of electrical injury in the U.S. in the five years from 2012 to 2016. As Table 1 shows, exposure to electricity accounted for 8% of all contract workers deaths at work over this five-year period, ranking behind falls, slips, or trips (34%), contact with objects or equipment (24%), and transportation incidents (21%).

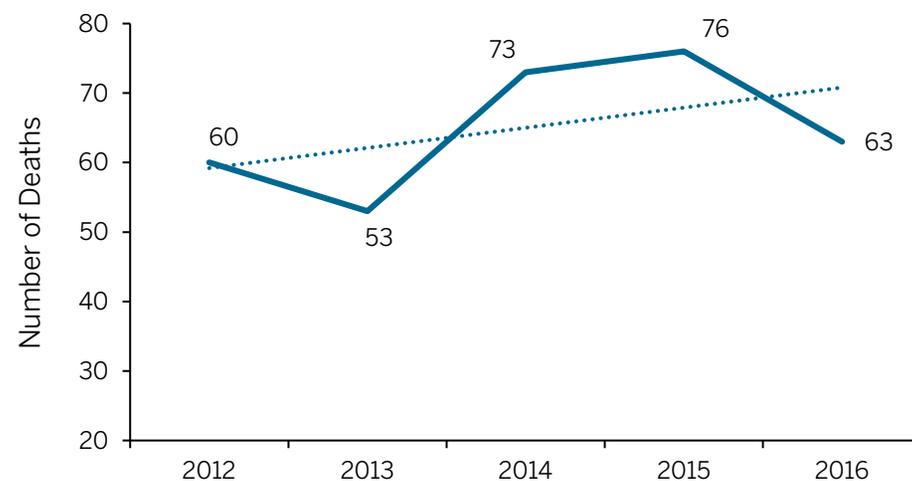
**Table 1. Fatal Contract Worker Injuries, 2012-2016**

Injury Event	Fatalities	Percentage
Fall, slip, or trip	1,350	34%
Contact with objects and equipment	951	24%
Transportation incidents	813	21%
Exposure to harmful substances or environments	502	13%
Exposure to electricity	325	8%
Violence and other injuries by persons or animals	196	5%
Fire or explosion	135	3%
<b>Total</b>	<b>3,951</b>	<b>100%</b>

Source: Bureau of Labor Statistics, Census of Fatal Occupational Injuries.

Although five years is a limited period for identifying trends, Figure 1 indicates that, while fluctuating from year to year, the number of fatal electrical injuries experienced by contract workers has followed an upward direction, reaching peak annual totals of 73 deaths in 2014 and 76 deaths in 2015 and then falling to 63 deaths in 2016.

**Figure 1. Annual Number of Fatal Contractor Electrical Injuries at Work, 2012-2016**



Source: Bureau of Labor Statistics, Census of Fatal Occupational Injuries.

Since the rise or fall of work-related injuries from one year to the next can just as easily reflect changes in the size of the employed population as workplace safety practices, it would be useful to compare year-to-year changes in the number of contract worker deaths in relation to changes in the number of contract workers in the workforce. Unfortunately, there is no standard data on the employment of contract workers that meet the CFOI definition of contract worker which would allow calculation of such injury rates. The trend on injury nonetheless does serve to indicate that electrical hazards remain an important issue for contract workers.

## WORKER CHARACTERISTICS

Of the 325 contract workers who died as a result of exposure to electricity in 2012-2016, all but one were male. Nearly nine in 10 of the victims (87%) were wage and salary workers, while the remaining 13% were self-employed. Most victims (78%) were born in the United States (78%). Another 12% of victims were born in Mexico. Most victims were in the prime of their working lives: (64%) were between the ages of 20 and 44, while another 22% of the victims were aged 45 to 54 years. Ten percent of victims were 55 to 64 years of age.

**Table 2. Fatal Contract Worker Electrical Injuries by Select Worker Characteristics, 2012-2016**

Worker Characteristics	Fatalities	Percentage
<b>Wage and salary workers</b>	<b>282</b>	<b>87%</b>
<b>Self-employed</b>	<b>43</b>	<b>13%</b>
<b>Gender</b>		
Men	324	100%
Women	1	0%
<b>Country of origin</b>		
United States	252	78%
Mexico	40	12%
Other	33	10%
<b>Age</b>		
20 to 24 years	39	12%
25 to 34 years	86	26%
35 to 44 years	84	26%
45 to 54 years	71	22%
55 to 64 years	31	10%
Other ages	14	4%

Source: Bureau of Labor Statistics, Census of Fatal Occupational Injuries.

## TYPE OF EXPOSURE

Table 3 shows fatal electrical injuries by type of exposure, indicating that 60% of injuries resulted from direct exposure to electricity and 39% from indirect exposure to electricity, with unspecified exposure in 1% of injuries. Sixteen percent of injuries were to direct exposure to 220 volts or less and 42% of injuries to direct exposure to greater than 220 volts. Two percent of fatal injuries were due to indirect exposure to 220 volts or less and 37% to indirect exposure of greater than 220 volts.

**Table 3. Fatal Contract Worker Electrical Injuries by Type of Exposure, 2012-2016**

Type of Exposure	Fatalities	Percentage
<b>Direct exposure to electricity</b>	<b>196</b>	<b>60%</b>
Direct exposure to electricity, 220 volts or less	51	16%
Direct exposure to electricity, greater than 220 volts	135	42%
Direct exposure, unspecified	10	2%
<b>Indirect exposure to electricity</b>	<b>127</b>	<b>39%</b>
Indirect exposure to electricity, 220 volts or less	8	2%
Indirect exposure to electricity, greater than 220 volts	119	37%
<b>Exposure unspecified</b>	<b>2</b>	<b>1%</b>
<b>Total</b>	<b>325</b>	<b>100%</b>

Source: Bureau of Labor Statistics, Census of Fatal Occupational Injuries.

## INJURY LOCATION

Just over two in five contractor deaths (43%) due to exposure to electricity occurred at an industrial place or premise, with 28% of these at a construction site, 5% at a factory or plant, and 2% at a warehouse. Another 15% of these deaths occurred at a private residence, 10% of which were residential construction locations. Streets or highways and public buildings were each the location of 14% of the deaths.

**Table 4. Fatal Contract Worker Electrical Injuries by Injury Location, 2012-2016**

Location	Fatalities	Percentage
<b>Industrial place and premise</b>	<b>141</b>	<b>43%</b>
Construction site	90	28%
Factory, plant**	16	5%
Warehouse, except loading platform*	6	2%
<b>Private residence</b>	<b>49</b>	<b>15%</b>
Residential construction	32	10%
<b>Street and highway</b>	<b>46</b>	<b>14%</b>
Local road or street	21	6%
Road construction*	16	5%
<b>Public building (includes hotel/motels, office buildings, restaurants, commercial stores, and schools)</b>	<b>45</b>	<b>14%</b>
<b>Other or unknown location</b>	<b>44</b>	<b>14%</b>
<b>Total</b>	<b>325</b>	<b>100%</b>

\*Does not include injuries that were not reported or did not meet publication criteria in one of the reporting years.  
 \*\*Does not include injuries that were not reported or did not meet publication criteria in two of the reporting years.  
 Source: Bureau of Labor Statistics, Census of Fatal Occupational Injuries.

## OCCUPATION OF VICTIM

Nearly seven in 10 (68%) of contractors who died as a result of exposure to electricity worked in construction and extraction occupations. Of these, 57% were in construction trades occupations, including electricians (31%), construction laborers (11%), and roofers (5%). Nearly one-fifth of remaining victims worked in installation, maintenance, and repair occupations (18%), most of whom were line installers and repairers (11%). Workers in service occupations accounted for 4% of deaths, with 3% in building and grounds cleaning and maintenance occupations.

**Table 5. Fatal Contract Worker Electrical Injuries by Occupation, 2012-2016**

Occupation	Fatalities	Percentage
Natural resources, construction, and maintenance occupations	285	88%
Construction and extraction occupations	220	68%
Construction trades workers	185	57%
Electricians	100	31%
Construction laborers	37	11%
Roofers*	16	5%
Supervisors, construction and extraction workers**	16	5%
Installation, maintenance, and repair occupations	59	18%
Line installers and repairers	37	11%
Electrical power-line installers and repairers	31	10%
Service occupations*	13	4%
Building and grounds cleaning and maintenance occupations**	10	3%
Other or unknown occupations	27	8%
<b>Total</b>	<b>325</b>	<b>100%</b>

\*Does not include injuries that were not reported or did not meet publication criteria in one of the reporting years.  
 \*\*Does not include injuries that were not reported or did not meet publication criteria in two of the reporting years.  
 Source: Bureau of Labor Statistics, Census of Fatal Occupational Injuries.

## EMPLOYER INDUSTRY

The employer industry refers to the industry of the firm that directly employs the worker, such as electrical contractor. All contractor workers who died as a result of exposure to electricity were employed by private industry, most of whom worked in goods producing industries (84%), primarily the construction industry (77% of total). Almost one-third of victims (32%) were employed by electrical contractors or other wiring installation contractors, while 6% were employed by plumbing, heating, or air-conditioning contractors.

Sixteen percent of victims were employed in service providing industries, with 5% of victims employed by companies providing services to buildings and dwellings. Another 2% of victims were employed by employers in trade, transportation, and public utilities industries.

**Table 6. Fatal Contract Worker Electrical Injuries by Employer Industry, 2012-2016**

Employer Industry	Fatalities	Percentage
<b>Goods producing</b>	<b>274</b>	<b>84%</b>
Construction	251	77%
Specialty trade contractors	186	57%
Building equipment contractors	126	39%
Electrical contractors, other wiring installation contractors	105	32%
Plumbing, heating, or air-conditioning contractors*	18	6%
Other or unknown goods producing	23	7%
<b>Service providing</b>	<b>51</b>	<b>16%</b>
Professional and business services	33	10%
Administrative & support and waste management & remediation services	27	8%
Services to buildings and dwellings	16	5%
Landscaping services**	10	3%
Trade, transportation, and utilities**	8	2%
Other or unknown services	10	3%
<b>Total</b>	<b>325</b>	<b>100%</b>

\*Does not include injuries that were not reported or did not meet publication criteria in one of the reporting years.  
 \*\*Does not include injuries that were not reported or did not meet publication criteria in two of the reporting years.  
 Source: Bureau of Labor Statistics, Census of Fatal Occupational Injuries.

## CONTRACTING INDUSTRY

The contracting industry refers to the industry of the firm that contracts the worker or the worker's employer. The contracting industry in the majority of incidents was in private industry (86% of fatalities), but a government entity was the contracting industry in 14% of these deaths. The construction industry is much less dominant than was the case as an employer industry, serving as the contracting industry in 23% of deaths, largely in residential building construction (10% of deaths) and nonresidential building construction (7% of deaths). Among goods producing contracting industries, natural resources and mining industries accounted for 10% of deaths and manufacturing industries for 8% of deaths.

Service providing industries were the contracting industry in 45% of deaths. The leading service providing industries included utilities (11% of deaths), retail trade (7%), real estate and rental and leasing (11%), and leisure and hospitality (3%).

**Table 7. Fatal Contract Worker Electrical Injuries by Contracting Industry, 2012-2016**

Contracting Industry	Fatalities	Percentage
<b>Private industry</b>	<b>278</b>	<b>86%</b>
Goods producing	132	41%
Construction	74	23%
Residential building construction	31	10%
Nonresidential building construction	24	7%
Natural resources and mining	33	10%
Manufacturing	25	8%
Service providing	146	45%
Trade, transportation, and utilities	68	21%
Retail trade	22	7%
Utilities	35	11%
Electric power generation, transmission & distribution	34	10%
Financial activities	41	13%
Real estate and rental and leasing	36	11%
Leisure and hospitality*	11	3%
<b>Government</b>	<b>47</b>	<b>14%</b>
Local government	31	10%
Service providing	23	7%
State government**	9	3%
<b>Total</b>	<b>325</b>	<b>100%</b>

\*Does not include injuries that were not reported or did not meet publication criteria in one of the reporting years.  
 \*\*Does not include injuries that were not reported or did not meet publication criteria in two of the reporting years.  
 Source: Bureau of Labor Statistics, Census of Fatal Occupational Injuries.

## WORKER ACTIVITY

Nearly three-quarters (73%) of workers were engaged in constructing, repairing, or cleaning activities at the time they experienced their electrical injury. These activities most often involved constructing, assembling, or dismantling (36% of total), repair or maintenance (27%), and inspecting or checking (4%). Another 13% of total injuries occurred while workers were using or operating tools or machinery and 7% while workers were engaged in materials handling operations.

**Table 8. Fatal Contract Worker Electrical Injuries by Worker Activity, 2012-2016**

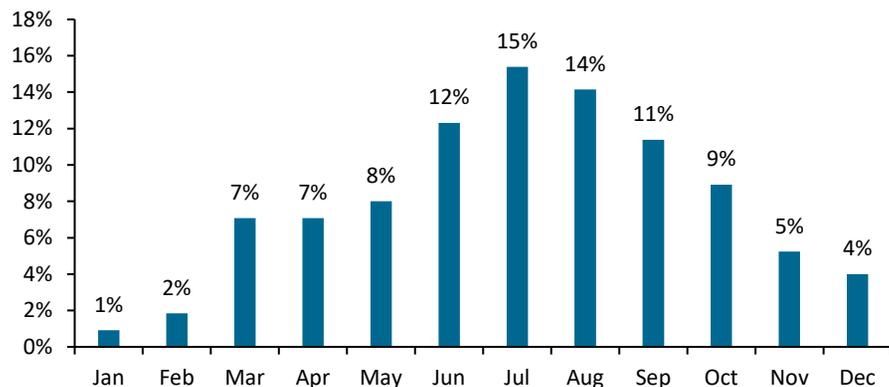
Worker Activity	Fatalities	Percentage
<b>Constructing, repairing, cleaning</b>	<b>238</b>	<b>73%</b>
Construction, assembling, dismantling	116	36%
Installing	80	25%
Repair or maintenance	89	27%
Inspecting or checking**	13	4%
<b>Using or operating tools, machinery</b>	<b>41</b>	<b>13%</b>
Operating heavy equipment*	14	4%
Logging, trimming, pruning**	7	2%
<b>Materials handling operations*</b>	<b>24</b>	<b>7%</b>
<b>Other or unknown activities</b>	<b>22</b>	<b>7%</b>
<b>Total</b>	<b>325</b>	<b>100%</b>

\*Does not include injuries that were not reported or did not meet publication criteria in one of the reporting years.  
 \*\*Does not include injuries that were not reported or did not meet publication criteria in two of the reporting years.  
 Source: Bureau of Labor Statistics, Census of Fatal Occupational Injuries.

## MONTH OF INJURY

The summer months from June through September were the peak period for contractor deaths from exposure to electricity, collectively accounting for 53% of the annual total, as shown in Figure 2, with July (15%) and August (14%) with the largest shares, followed by June (12%) and July (11%). As Figure 2 shows, injuries progressively fall with cold weather months, with January (1%), February (2%), and December (4%) recording the lowest shares of fatal electrical injuries.

**Figure 2. Fatal Contract Worker Electrical Injuries by Month, 2012-2016**



Source: Bureau of Labor Statistics, Census of Fatal Occupational Injuries.

**Table 9. Fatal Contract Worker Electrical Injuries by Month of Incident, 2012-2016**

Month	Deaths	Percent
January	3	1%
February	6	2%
March	23	7%
April	23	7%
May	26	8%
June	40	12%
July	50	15%
August	46	14%
September	37	11%
October	29	9%
November	17	5%
December	13	4%

Source: Bureau of Labor Statistics, Census of Fatal Occupational Injuries.

# CONTRACTOR ELECTRICAL SAFETY – SHORTCUTS MAY BE FATAL

As the data indicate, construction workers account for a substantial share of contract worker deaths from exposure to electricity. Construction projects often entail strong pressures on contractors to complete projects on-time and on- or under-budget, which for subcontractors can translate to tight deadlines to stay on schedule. When schedules are threatened, workers may be pressured to work more quickly, or work longer hours, both of which can compromise working safely. Such pressures are a particular threat when they short-change the deliberate steps involved in ensuring electrical safety, as noted in this summary of an injury incident from OSHA inspection records.

- Contractors need to establish reasonable expectations for when work will get done and not promise unrealistic deliverables in hopes of landing a contract.
- Owners should select contractors based on reliability and safety considerations. Contractors should do the same in selecting subcontractors.
- Top management must communicate to supervisors, whose responsibilities include both keeping production on track and ensuring that work is done safely, that safety must not be compromised when schedules are threatened.

Three employees of an electrical contractor were at a power generation facility, where they were conducting voltage testing on a 4160/480-volt station service transformer that was replacing an old transformer.

The transformer did not have any exposed live parts. The plant operator closed the circuit breaker for the transformer in the breaker room, energizing the transformer.

The employees did a brief walk around to see what was needed to do the work, which involved taking voltage readings, moving from lower to higher voltage along five positions on the transformer's tap changer. The work order stated that the transformer had to be energized while changing the taps. A locking pin on the tap had to be released in order to turn the handle, and at each position, one employee would release the locking pin while a second turned the handle.

When the tap changer was in the third position, bus meter three indicated 4445 volts, rather than the expected 4160 volts.

As the handle was slowly being turned, the employees saw a small electrical arc and stopped to take a voltage reading. The employees were instructed to work faster. As the employees moved on, they noticed another electrical arc, followed by smoke and an electrical fault. One employee pushed another out of the way, while the clothes of the employee who was turning the handle ignited. He suffered second-degree burns on his left arm, shoulder, right collar bone, and abdominal area. The other two employees suffered first-degree burns. The employees were wearing hard hats, safety glasses, leather gloves, and street clothes.

OSHA Inspection 317892891; Report ID 0454510

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# DISCUSSION

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The Bureau of Labor Statistics began collecting fatal injury information on contract workers in 2011 at a time of rising concern about health and safety protections for the growing number of temporary workers in the economy. These concerns included questions about whether contract workers received adequate health and safety training for the tasks they performed and who bore responsibility for compliance with health and safety standards in situations involving an employer and a contractor.

The predominance of construction and extraction occupations among contract workers who died as a result of electrical injury in 2012-2016, particularly workers in construction trades, suggests that many of the contract workers who are at-risk for electrical injury represent a different population than those in the emerging contract workforce engaged in freelance work or in other temporary work situations. For construction trades, as well as many installation and repair occupations, contract work is a well-established arrangement that is distinct from the more recent work associated with the so-called gig economy or other forms of temporary work. Still, it is not clear that even construction or other workers in the established contract worker situations have electrical safety training that is adequate to the hazards encountered on the worksite.

Electrical hazards come in a variety of forms, from overhead powerlines to defective wiring or damaged equipment, and workers may be exposed to electrical hazards in a wide array of work environments. The data in this report indicate that many of the contractors who experienced fatal electrical injuries were not trained electrical specialists, including construction laborers, roofers, service workers, and other occupations. Inasmuch as these are fatal injuries, it is important to recognize that electrical safety training is likely to be needed not only by workers who are electrical specialists, but many others who may be exposed to electrical hazards in their work activities. Here, an additional issue raised by the 12% of fatally injured contractors in 2012-2016 who were Mexican born is that language considerations may need to be addressed in the delivery of electrical safety training in order to enhance effectiveness.

Ensuring contractor electrical safety at the worksite is a joint responsibility of the firms directly employing the worker, such as a staffing agency or subcontractor, and the host employer that hires the contractor. Host employers should include safety experience as a criterion in selecting contracting employers and ensure that contract employees have the necessary safety competencies to perform the assigned work, beyond any training provided by the host employer specific to the work task. Contracting employers, in turn, need to ascertain that contract workers in their employ are placed with host employers who provide safe working conditions. Consultation between host employers and contracting employers can help to provide clarity about mutual and separate responsibilities for ensuring safety of workers. This would include agreement about realistic production schedules that don't permit short-cuts in safety procedures when deadlines loom.

Finally, it is worth noting that self-employed workers – who represented 13% of fatal contractor electrical injuries in 2012-2016 – can also benefit from assuming joint responsibility with host employers for electrical safety at the jobsite. Self-employed workers generally fall outside the protective health and safety policy framework that applies to most wage and salary workers and so assume a large measure of responsibility for their own safety, at least as it relates to the acquisition of proper training and applying appropriate safety protocols in the work task. Here again, however, collaboration between host employers and self-employed contractors can help ensure that workers are competent for the work task and that the workplace is a safe environment for the worker.

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