



Edison Electric
INSTITUTE

Serious Injury & Fatality (SIF) Criteria:

Approved Changes

August 1, 2024



EEI SIF Criteria Review Team

- Tom Dyson, Ameren Services
- Todd Gallaher, Southern California Edison
- Antonina Gattuso, Exelon Corporation
- James Goodnite, American Electric Power
- Tony Klutz, Avista Corporation
- Angelica Marucci, Public Service Electric & Gas Company
- Heidi Meyer-Bremer, Michels Power, Inc. (Representing the OSHA ET&D Partnership)
- David Myers, Southern Company
- Joe O'Connor, In-Tec, Inc. (EEI Consultant)
- Marguerite Porsch, CenterPoint Energy
- Jamie Rottmann, Entergy Corporation
- Phil S. Smithers, Arizona Public Service Company
- Julie Spencer, Duke Energy
- Bob Spencer, Tennessee Valley Authority
- Keith Williams, In-Tec, Inc. (EEI Consultant)

Medical Advisors:

- John Koehler, MD, Exelon Corporation
- Stuart Solomon, MD, Public Service Electric and Gas Company

Technical Advisors:

- Elif Erkal, PhD
- Matthew Hallowell, PhD

EEI Contact:

Carren Spencer
Director, Safety & Health Policy
(202) 508-5166
cspencer@eei.org

Background

EEL members have prioritized serious injury and fatality (SIF) elimination and through collaboration across the industry are implementing data-driven actions to achieve this goal. For more than a decade, EEL has collected SIF data in the Annual Safety Survey based on an industry-developed criteria. The criteria were developed by the Occupational Safety and Health (OSH) Committee's Recordkeeping Task Force to create a consistent definition of 'serious' for benchmarking and learning to advance the goal of SIF elimination.

Contrary to past theory, there is mounting evidence that the causes of SIFs are different from low-severity injuries and that reducing the rate of low-severity injuries may not lead to a corresponding reduction in SIFs. Thus, SIFs must be studied separately from lower-severity incidents.

From a data availability perspective, SIFs are rare and extreme events that, taken in small sample sizes, do not necessarily represent any meaningful pattern or trend. Therefore, individual organizations simply do not have enough data to fuel the learning that is needed to eliminate SIFs. Only through shared industry learning can we advance our goal.

In addition to developing this common definition of serious injuries, the EEL OSH Committee created the Safety Classification and Learning (SCL) Model—a system to consistently classify incidents and observations, including those with the potential to cause serious injuries or fatalities (PSIF). Tracking and learning from PSIF increases the number of learning opportunities and has helped to redirect attention from lower-severity incidents to conditions that have the potential to be life-threatening or life-altering—an important step toward the elimination of SIFs.

The underpinning of shared learning is a set of common definitions and the ability to classify incidents consistently and reliably in accordance with those definitions. This is true for any scientific field, because a common understanding of a topic influences how we communicate and what we perceive as relevant.

Vision, Mission, and Goals

With the understanding that the OSH Committee's vision is to prevent serious injuries and fatalities, and that the causal factors of SIF differ from those of lower-severity injuries, a team of industry safety professionals and medical advisors were assembled to refine the current SIF Criteria to better focus on life-threatening and life-altering injuries.

After an exhaustive review and lengthy discussion on the existing criteria, the team agreed that the current definitions do not accurately reflect the types of injuries that would provide learning opportunities related to high-energy incidents known to cause the most serious injuries. It was agreed that the SIF Criteria revision should include injuries that closely conform to the following definitions for life-threatening and life-altering:

Life-Threatening: A physical injury that if not immediately addressed is likely to lead to the death of the affected individual and will usually require the intervention of life sustaining support by external emergency response personnel or colleagues.

Life-Altering: A physical injury that results in permanent loss of use of an internal organ, body function, or body part. The existing SIF criteria were revised based on these new definitions.

The revised SIF Criteria in Appendix 1 reflects the application of these definitions.

On July 31, EEL members approved adoption of the new criteria. Following is a summary of the key changes that will take effect January 1, 2025. Included as Appendix 2 is the current SIF criteria.

Key Changes

- Addition of definitions of life-threatening and life-altering.
- *Amputations involving bone*: The exclusion of the distal phalanx unless thumb, index, or great toe.
- *Concussions*: Changed to head trauma resulting in traumatic brain injury (TBI), intracranial bleeding, or loss of consciousness for greater than 30 minutes.
- *Trauma to internal organs*: Changed to vital organs to include: brain, spinal cord, heart, lungs, kidneys, liver, spleen, large and small intestine, and stomach.
- *Bone fractures*: Changed to only those fractures requiring surgery for repair (pins, rods, screw, plates, wires, etc.). Excludes fingers and toes.
- *Complete tendon, ligament, and cartilage tears*: Removed from criteria.
- *Herniated disc*: Changed to acute traumatic herniated disc with neurologic deficit—sensory or motor.
- *Lacerations resulting in severed tendons or deep wound requiring internal stitches*: Removed from criteria.
- *2nd (10% body surface) or 3rd degree burns*: Changed to 2nd degree burn (10% body surface); 3rd degree burn (5% of body surface) or 3rd degree burn requiring skin graft.
- *Eye injuries resulting in eye damage or loss of vision*: Changed to eye injuries resulting in permanent vision loss or change in vision.
- *Injections of foreign materials*: Changed to high pressure injection injuries requiring surgical debridement and irrigation.
- *Severe heat exhaustion and all heat stroke cases*: Changed to include only medically diagnosed heat stroke.
- *Dislocation of a major joint*: Now limited to the hip, elbow or knee. The shoulder, wrist or ankle should not be included.
- *Electrical contact injuries*: This is a new category added to capture the unique injuries caused by electrical contacts. Specifically, injuries resulting in or requiring one of the following procedures:
 - Surgical repair, skin grafting or amputation
 - Permanent contracture of a joint or loss of function
 - Cardiac Dysrhythmia

Qualifying burns resulting from electrical contact should be classified using this category rather than the burns category.

- *Vascular trauma requiring surgery*: This is a new category to capture severe injuries.
- *Acute chemical or radiological exposure resulting in injury to vital organs*: This is a new category. As with electrical contact injuries, this category was designed to capture and classify injuries caused by these specific hazards. Burns resulting from these hazards should be classified here.
- *Other injuries*: Instructions for this section are included to clarify that injuries classified as 'other' must meet the life-threatening or life-altering definition.

APPENDIX 1 – EEI SERIOUS INJURY AND FATALITY (SIF) CRITERIA

Effective Date: January 1, 2025

What is a SIF?

SIF was developed to be a metric that better defines serious injuries and fatalities. It includes work-related fatalities, life-threatening injuries, life-altering injuries, or the SIF criteria described below.

DEFINITIONS

Work-Related: If the injury is OSHA recordable, it should be considered work-related.

Life-Threatening: A physical injury that if not immediately addressed is likely to lead to the death of the affected individual and will usually require the intervention of life sustaining support by external emergency response personnel or colleagues.

Life-Altering: A physical injury that results in permanent loss of use of an internal organ, body function, or body part.

Serious Injury Incidence Rate (SIIR): The SIIR is calculated using the formula (# cases x 200,000/hours worked). The calculation of the SIIR uses the same hours worked number as the calculation of the Recordable Incidence Rate.

Identifying and Classifying Serious Injuries

When the work-related requirement has been met, compare the employee injury to the Serious Injury Criteria listed below to determine if the injury is deemed “Serious.” (Each case should be counted only once. In cases with multiple injuries, assign the case to the category representing the most severe injury.)

SIF CRITERIA

1. Fatalities

2. Amputations (involving bone) excludes distal phalanx.

Excludes distal phalanx unless thumb, index or great toe.

Frequently Asked Questions

Q. *If the amputation of a distal phalanx includes more than one finger that is not a thumb or index finger, would this be considered a SIF?*

A. No, the multiple amputation of distal phalanges would not count as a SIF unless it included the thumb or index finger. On the foot, it would not count unless it included the great toe.

3. Head trauma that results in a traumatic brain injury (TBI), intracranial bleeding or loss of consciousness for greater than 30 minutes.

Intracranial can include any bleeding within the confines of the skull and things that are outside of the brain tissue like an epidural bleed.

4. **Injury or trauma to vital organs to include brain, spinal cord, heart, lungs, kidneys, liver, spleen, large and small intestine, and stomach.**

Frequently Asked Questions

1. *When should a case of organ damage be classified as serious?*
- A. Injuries and occupational illnesses resulting from acute exposures should be classified as serious if objective medical evidence indicates significant or sustained (beyond initial event, acute treatment and testing) organ damage, or progressive changes in organ function or anatomy. This criterion does not include injury from long term or repetitive exposures.

Only cases that involve relatively short-term events should be included in the serious metric, even if the result is an illness. Illnesses that develop from exposure over long periods of time (years) are not to be captured in this metric (example, fibrosis of the lung from asbestos exposure).

- Q. *Is a hernia considered a serious case?*

- A. A hernia by itself would not be classified as a severe case. However, if the hernia causes damage to an internal organ such as a strangulated colon, it would be classified as a severe case.

5. **Bone fractures requiring surgery for repair (pins, rods, screw, plates, wires, etc.) Excludes fingers and toes.**

Bone fracture that requires open reduction and internal fixation (ORIF) or other immediate surgical intervention.

Bone fracture of the fingers and toes that require ORIF is excluded.

Any injury to the spine that results in permanent neurological impairment and/or a sensory or motor deficit that does not resolve within the expected/normal recovery time.

Frequently Asked Questions

- Q. *Are all fractures of the fingers and toes that result in a permanent loss of mobility excluded?*

- A. All fractures of the fingers and toes are excluded.

6. **Acute traumatic herniated disc with neurologic deficit – sensory or motor**
7. **2nd degree burn (10% body surface); 3rd degree burn (5% of body surface) or 3rd degree burn requiring skin graft.**

Burns resulting from **electrical contact** or **chemical exposure** should be classified respectively under criterion #12 or #14.

8. Eye injuries resulting in permanent vision loss or change in vision.

Frequently Asked Questions

Q. Does a corneal abrasion constitute eye damage injury?

A. No. Corneal abrasions and/or scratches due to foreign bodies are considered minor and usually heal quickly.

9. High pressure injection injuries requiring surgical debridement and irrigation.

This could include injuries resulting from injection of hazardous materials such as hydraulic fluid or hydrogen fluoride.

10. Heat Stroke

Must meet medical diagnosis of heat stroke.

11. Dislocation of the hip, elbow or knee.

Does not include dislocation of the patella (kneecap).

Count only cases that required the manipulation or repositioning of the joint back into place under the direction of a treating doctor.

12. Electrical contact injuries.

Injuries resulting in or requiring one of the following procedures:

- Surgical repair, skin grafting or amputation
- Permanent contracture of a joint or loss of function
- Cardiac Dysrhythmia

If there is a burn resulting from an electrical contact, please classify here using the burn criterion (#7) in addition to this criterion.

13. Vascular trauma requiring surgery

14. Acute chemical or radiological exposure resulting in injury to vital organs to include brain, spinal cord, heart, lungs, kidneys, liver, spleen, large and small intestine, and stomach.

If there is a burn resulting from a chemical or radiological exposure, please classify here using the burn criterion (#7) in addition to this criterion.

15. Other injuries

The "Other injuries" category should only be selected to report injuries not identified in the existing categories. The injury must meet the life-threatening or life-altering definition.

Injuries listed in this document are intended to capture life-threatening and life-altering injuries. We recognize that there is variability in recovery from injury by individuals. Injuries that do not generally result in life-altering outcomes have been omitted.

When applying this classification to life-altering injuries not listed, please select only if an employee is unable to engage in prior level of work functional ability. A description box is provided to briefly describe the nature of the injury.

APPENDIX 2 – EEI SERIOUS INJURY AND FATALITY (SIF) CRITERIA

Effective Date: **January 1, 2023**

Serious Injuries and Fatalities

What is a SIF?

SIF was developed to be a metric that better defines serious injuries and fatalities. It includes work-related fatalities and life-threatening and life-altering injuries.

Defining Work Related

If the injury is OSHA recordable, it should be considered work-related.

Identifying and Classifying Serious Injuries

When the work-related criteria have been met, compare the employee injury to the Serious Injury criteria listed below to determine if the injury is deemed “Serious.” (Each case should be counted only once. In cases with multiple injuries, assign the case to the category representing the most severe injury.)

1. Fatalities
2. Amputations (involving bone)
3. Concussions and/or cerebral hemorrhages
 - a. Include all cerebral hemorrhages and only severe concussions resulting in a loss of consciousness and/or symptoms lasting more than 24 hours.
4. Injury or trauma to internal organs

Frequently Asked Questions

- i. When should a case of organ damage be classified as serious, such as an exposure to a chemical substance?

Injuries should be classified as serious if objective medical evidence indicates significant or sustained (beyond initial event, acute treatment, and testing) organ damage, or progressive changes in organ function or anatomy. This criterion does not include rapidly dissipating signs and symptoms from the acute event (such as irritation or localized redness) and their associated treatment, or injury from, long term or repetitive exposures.

Only cases that involve relatively short-term events should be included in the serious metric, even if the result is an illness (example, reactive upper-dysfunction syndrome resulting from chlorine exposure event). Illnesses that develop from exposure over long periods of time (years) are not to be captured in this metric (example, fibrosis of the lung from asbestos exposure).

- ii. Is a hernia considered a serious case?

A hernia by itself would not be classified as a severe case. However, if the hernia causes damage to an internal organ such as a strangulated colon, it would be classified as a severe case.

5. Bone fractures with the following considerations:
 - a. Include fractures of the fingers and toes only if they are open, compound, or comminuted (crushed).
 - b. Include all bone fractures of the face, skull, or navicular wrist bone.
 - c. Exclude any hairline fractures unless described above.

Frequently Asked Questions

- i. Are all hairline fractures excluded?

Hairline fractures in the face, skull, or navicular wrist bone are considered a serious injury. All other hairline fractures are excluded.

- ii. Are nasal fractures included as a serious injury under the bone fracture criteria?

Typical nasal cartilage-only fractures are not likely to cause life altering or life-threatening injuries unless other facial bone fractures are involved. If the employee has a "broken nose" that involves facial bone fractures, the injury should be included as a serious injury. Nasal cartilage-only fractures should not be included as a serious injury.

- iii. Are broken teeth considered a serious case?

No, unless there were other injuries in addition that meet the criteria (Example: broken jaw).

6. Complete tendon, ligament, and cartilage tears of the major joints (e.g., shoulder, elbow, wrist, hip, knee, and ankle).

Frequently Asked Questions

- i. Are partial tendon, ligament and cartilage tears included as serious injuries?

No. Partial tears are not to be classified as a serious injury.

- ii. Should muscle tears be classified as a serious injury?

A complete muscle tear commonly occurs when the entire muscle is torn or detached from the tendon. If this occurred, it would be classified as a serious injury.

7. Herniated disks (neck or back)

8. Lacerations resulting in severed tendons and/or a deep wound requiring internal stitches.

- a. Do not include severed tendons and/or deep wounds requiring internal stitches to the fingers and toes.

Frequently Asked Question

- i. Does a puncture that requires internal sutures meet the laceration criteria?

Yes.

9. 2nd (10% body surface) or 3rd degree burns

10. Eye injuries resulting in eye damage or loss of vision Frequently

Asked Questions

- i. Does a corneal abrasion constitute eye damage injury?

No. Corneal abrasions and/or scratches due to foreign bodies are considered minor and usually heal quickly.

- ii. What are some examples of “eye damage” that meet the criteria?

Examples of eye damage would be cases where the eyeball is penetrated or damaged by a significant foreign body.

- iii. Does loss of vision mean total loss or is some degradation of vision all that is required to meet the serious injury criteria?

Loss of vision means any permanent change in the employee’s vision or change that requires corrective lenses.

11. Injections of foreign materials (e.g., hydraulic fluid)

12. Severe heat exhaustion and all heat stroke cases. (Severe heat exhaustion cases are those where all of the following symptoms are present: profuse sweating, nausea, and confusion). If confirmed fainting occurs due to the heat exposure, this is an automatic severe case.

- a. Exclude cases where confirmed personal medical conditions or medications significantly contributed to heat exhaustion.

Frequently Asked Question

- i. If an employee receives an IV for heat exhaustion, does this make it a severe case?

The application of an IV does not necessarily indicate a severe case; further investigation should be conducted to determine if the criteria for severe heat exhaustion were met (profuse sweating, nausea, and confusion or confirmed fainting).

13. Dislocation of a major joint (shoulder, elbow, wrist, hip, knee, and ankle)

- a. Count only cases that required the manipulation or repositioning of the joint back into place under the direction of a treating doctor.

14. The “Other Injuries” category should only be selected for reporting injuries not identified in the existing categories. A description box is also provided to briefly describe the nature of the injury.

Other Terms and Definitions

1. Serious Injury Incidence Rate (SIIR)

The SIIR is calculated using the formula (# cases x 200,000/hours worked). The calculation of the SIIR uses the same hours worked number as your calculation of the Recordable Incidence Rate.