



## **TEXAS CONTAMINATED SHARPS INJURIES: 2006 Report**

**This report contains the aggregate contaminated sharps injury data submitted to Texas Department of State Health Services as required by Texas Health and Safety Code, Chapter 81, Subchapter H (HB2085), 76<sup>th</sup> Legislature.**

Texas Bloodborne Pathogen regulations require governmental entity reporting of contaminated sharps injuries. This report summarizes contaminated sharps injuries reported by governmental entities in Texas during 2006: where the injuries occurred; when did the injuries occur by time and date; information about the workers who sustained injuries; what was the original intended use of sharps devices involved in the injuries; how the injuries occurred; type of sharps devices in use at time of injuries; worksite controls; and safety engineered sharps protection status of devices involved in the injuries.

Aggregate reports of contaminated sharps injuries in Texas may be accessed at:  
[Texas Contaminated Sharps Injuries Reports](#)

This 2006 report also includes information concerning reports of risk among non-hospital based nurses, winged steel needles, and suture needles. Recommendations for a safe worksite practices are included at end of report.

### **Where Injuries Occurred**

Contaminated sharps injuries are reported in by Public Health Service Regions: [Texas Public Health Service Regions](#)

The greatest number of injuries was reported in Region 6 (figure 1).

Figure1. Contaminated Sharps Injuries by Health Service Regions

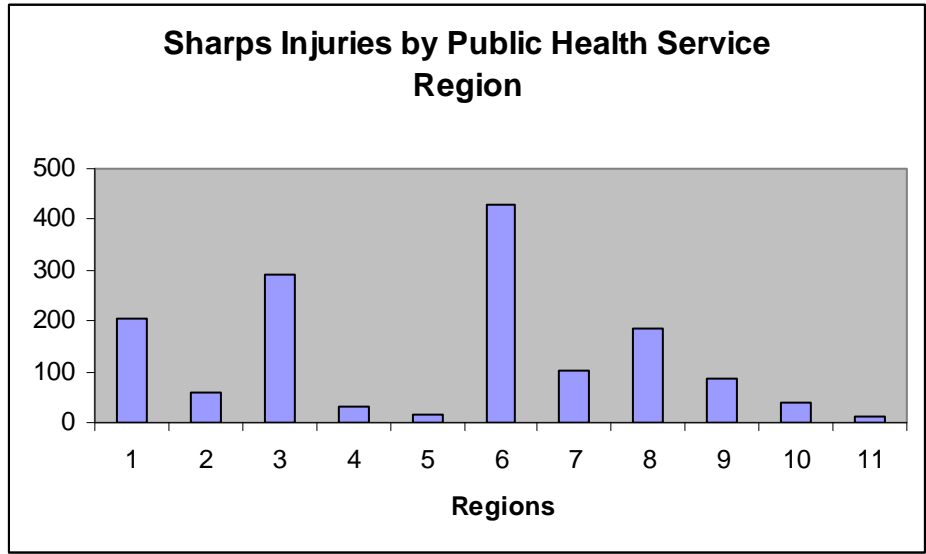


Table 1 reflects the diverse types of governmental entity reporting sharps injuries, table 2 further defines the location within governmental entities, and table 3 lists specific work sites of injuries.

Table 1. Injuries by Type of Governmental Entity (n=1473)

Governmental Entity	Number	Percent
Hospitals/Medical/Health Centers	780	53.0%
Colleges/Universities	493	33.5%
City/County Services	99	6.7%
State Facilities	75	5.1%
Schools	15	1.0%
Home Health	8	0.5%
Long Term Care	2	0.1%
Other	1	0.1%
<b>Total</b>	<b>1473</b>	<b>100.0%</b>

Table 2. Injuries by Type of Facility (n=1473)

<b>Location/Facility</b>	<b>Number</b>	<b>Percent</b>
Hospital	1210	82.1%
Clinic/Outpatient/Amb Surgery	91	6.2%
Correctional Facility	69	4.7%
EMS/Fire/Police	23	1.6%
School/College	21	1.4%
Residential Facility	17	1.2%
Dental Facility	11	0.7%
Home Health	9	0.6%
Medical Examiner Office/Morgue	8	0.5%
Laboratory (freestanding)	6	0.4%
Other	3	0.2%
Blood Bank/Center/Mobile	3	0.2%
Recycling Center	2	0.1%
<b>Total</b>	<b>1473</b>	<b>100.0%</b>

As may be noted in table 3, the surgery/operating room and the patient's room are the sites of the most injuries with the emergency department reporting the third highest number.

Table 3. Work Area Where Injury Occurred (n=1473)

<b>Work Area</b>	<b>Number</b>	<b>Percent</b>
Surgery/Operating Room	377	25.6%
Patient/Resident Room	260	17.7%
Emergency Department	160	10.9%
Medical/Outpatient Clinic	114	7.7%
Critical Care Unit	87	5.9%
Laboratory	68	4.6%
Procedure/Med Room	68	4.6%
L & D/Gynecology Unit	67	4.5%
Dental Clinic	40	2.7%
Medical/Surgical Unit	36	2.4%
Other/Unknown/Missing	32	2.2%
Radiology Department	27	1.8%
Autopsy/Pathology	16	1.1%
Ambulance	12	0.8%
Nursery	12	0.8%
Floor, not Patient Room	12	0.8%
Service/Utility Area	11	0.7%
Blood Bank/Dialysis	11	0.7%
Infirmery/School Clinic	10	0.7%
Pediatrics	9	0.6%
Field (non EMS)	9	0.6%
Pre-op or PACU	8	0.5%
Central Supply/Sterile Prep	7	0.5%
Home	6	0.4%
Jail Unit	6	0.4%
Classroom	5	0.3%
Restroom	3	0.2%
<b>Total</b>	<b>1473</b>	<b>100.0%</b>

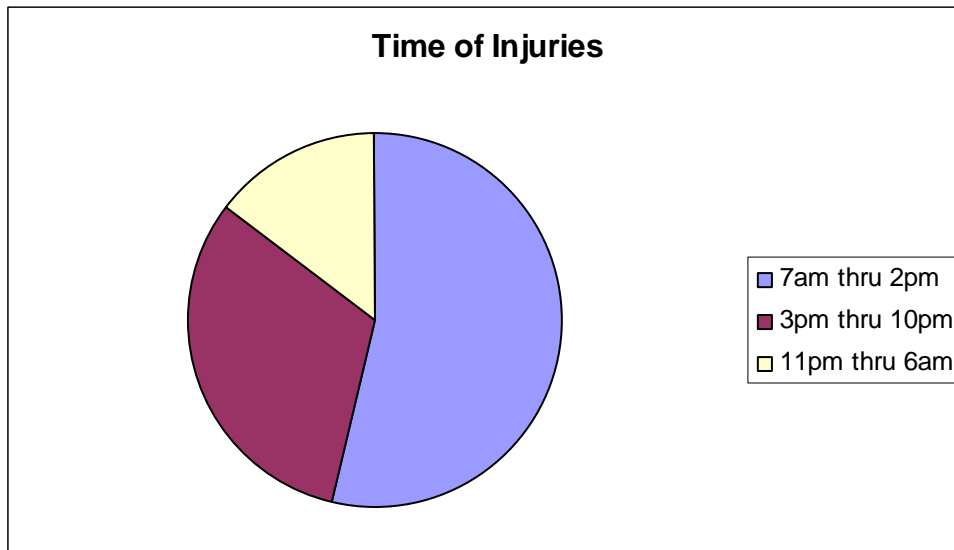
### When Injuries Occurred

There continues to be neither seasonal variation (table 4) nor a change in the time of day (figure 2) when sharps occur from previous years of Texas reporting.

Table 4. Sharps Injuries per Month (n=1473)

Month of Injury	Number	Percent
January	144	9.8%
February	126	8.6%
March	142	9.6%
April	129	8.8%
May	113	7.7%
June	118	8.0%
July	99	6.7%
August	120	8.1%
September	103	7.0%
October	139	9.4%
November	116	7.9%
December	124	8.4%
<b>Total</b>	<b>1473</b>	<b>100.0%</b>

Figure 2. Time of Sharps Injuries



### **Healthcare Worker Information**

Registered Nurses and Interns/Residents reported the greatest number of injuries in Texas governmental entity facilities in 2006 although physicians were third in number of reported injuries (table 5).

Table 5. Sharps Injuries by Job Classification (n=1473)

<b>Job Classification</b>	<b>Number</b>	<b>Percent</b>
Registered Nurses	348	23.6%
Intern/Residents	246	16.7%
MD/DO/Fellows	157	10.7%
Licensed Vocational Nurses	121	8.2%
OR/Surgical Techs	106	7.2%
Lab Tech/Phlebotomist/IV Team	91	6.2%
Aide (CNA, CMA, HHA, Orderly)	57	3.9%
Medical Students	51	3.5%
Other/Unknown	49	3.3%
Housekeeper/Laundry	42	2.9%
Dentist/Dental Hygienist/Tech	30	2.0%
First Responders	29	2.0%
Physician Assistants	22	1.5%
Other Techs	20	1.4%
School Personnel/Research	15	1.0%
Radiology/Radiologic Techs	15	1.0%
Other Students	12	0.8%
Dental Students	12	0.8%
Respiratory Therapist/Techs	10	0.7%
CRNA/NP/Nurse Midwife	10	0.7%
Nursing Students	7	0.5%
Maintenance/Safety Security	5	0.3%
ER Techs	5	0.3%
Morgue Tech/Autopsy Techs	4	0.3%
Physical Therapist	4	0.3%
Central Supply/Sterile Process	3	0.2%
Hemodialysis Techs	2	0.1%
<b>Total</b>	<b>1473</b>	<b>100.0%</b>

### **Non-hospital based Registered Nurses Study**

As may be noted in table 2, hospitals reported 82.1% of injuries in Texas in 2006. Thirteen percent of the 2006 Texas governmental entity Registered Nurse injuries occurred in facilities other than a hospital. A study of non-hospital based Registered Nurses conducted in other states, found the sharps injuries risk to be substantial for nurses not working in hospitals, with an estimated excess of 145,000 injuries per year.<sup>1</sup> According to the study, risk management strategies that can effectively reduce the risk burden include:

- (1) Use of a team of frontline staff in the prevention program

- (2) Effective product selection and implementation
- (3) Improved reporting and post-exposure follow up and
- (4) Effective bloodborne pathogen education from orientation through annual updates.<sup>1</sup>

**Demographics of Injured Workers in Texas**

Females continue to suffer the majority (65% in 2006) of injuries and the worker age 25 through 34 years reported the highest number of sharps injuries (tables 6 and 7).

Table 6. Gender of Injured Worker

Gender of Worker	Number	Percent
Female	956	64.9%
Male	475	32.2%
Missing	42	2.9%
<b>Total</b>	<b>1473</b>	<b>100.0%</b>

Table 7. Age of Injured Worker

Age	Number	Percent
Less than 18	10	0.7%
18 through 24	143	9.7%
25 through 34	575	39.0%
35 through 44	306	20.8%
45 through 54	198	13.4%
55 through 64	82	5.6%
65 through 79	16	1.1%
Missing	143	9.7%
<b>Total</b>	<b>1473</b>	<b>100.0%</b>

Ninety-five percent of the sharps injuries were sustained to the hand of injured workers (table 8).

Table 8. Area of Body Injured

Body Area	Number	Percent
Hand	1396	94.8%
Arm	35	2.4%
Leg/Foot	18	1.2%
Unknown	16	1.1%
Torso	5	0.3%
Face/Neck	3	0.2%
<b>Total</b>	<b>1473</b>	<b>100.0%</b>

### **How Sharps Injuries Occurred**

Suturing, giving injections, collecting blood samples, and use of intravenous/central lines accounted for the highest number of injuries in Texas governmental entities as reported for the year of 2006 (table 9).

Table 9. Use of Sharp at Time of Injury (n=1473)

<b>Original Intended Use</b>	<b>Number</b>	<b>Percent</b>
Injection, SC/ID/IM	342	23.2%
Suturing Skin	187	12.7%
Draw Venous Blood Sample	183	12.4%
Start/Use IV/Central Line	149	10.1%
Cutting	128	8.7%
Unknown/Not Applicable	109	7.4%
Suturing Deep	105	7.1%
Surgery/Surgical Procedure	62	4.2%
Obtain Body Fluid/Tissue Sample	45	3.1%
Draw Arterial Blood Sample	42	2.9%
Dental Procedure	28	1.9%
Other Suturing	22	1.5%
Finger Stick/Heel Stick	21	1.4%
Contain Specimen	19	1.3%
Drilling	7	0.5%
Electrocautery	6	0.4%
Wiring	5	0.3%
Shaving	5	0.3%
Dialysis	4	0.3%
Tattoo	4	0.3%
<b>Total</b>	<b>1473</b>	<b>100.0%</b>



Table 10 displays how the injury occurred by procedure or process.

Table 10. Procedure or Process Involved in Injury (n=1473)

<b>How exposed</b>	<b>Number</b>	<b>Percent</b>
Between Steps of a Multistep Procedure	274	18.6%
Suturing	172	11.7%
Patient Moved During the Procedure	137	9.3%
Use of Sharps Container	111	7.5%
Found in an Inappropriate Place	101	6.9%
Unsafe Practice	96	6.5%
Other/Unknown	88	6.0%
Interaction with Another Person	85	5.8%
Activating Safety Device	64	4.3%
Disassembling Device or Equipment	63	4.3%
Laboratory Procedure/Process	57	3.9%
Recapping	52	3.5%
Use of IV/Central Line	48	3.3%
Surgery	32	2.2%
Preparation for Reuse of Instrument	22	1.5%
Procedure/Environment	20	1.4%
Device Malfunctioned	17	1.2%
Blade Scalpel Use	17	1.2%
Stuck Self	9	0.6%
Dental Process	8	0.5%
<b>Total</b>	<b>1473</b>	<b>100.0%</b>

### **Type of Sharp**

The type of sharp involved in injuries is displayed in table 11, with syringes/needles and suture needles involved in the greatest percentages of injuries. However, both IV catheter/needles and scalpels each account for over 8 percent of injuries.

Table 11. Type of Sharp Involved In Injury (n=1473)

<b>Type of Sharp</b>	<b>Number</b>	<b>Percent</b>
Disposable Syringe/Needle	395	26.8%
Suture Needle	325	22.1%
IV Catheter/Needles	128	8.7%
Scalpel	123	8.4%
Winged Steel Needle	99	6.7%
Insulin Syringe/Pen	85	5.8%
Other Surgical Instruments	83	5.6%
Other/Unknown	61	4.1%
Blood Tube Holder/Needle	50	3.4%
Tuberculin Syringe	29	2.0%
Pre-filled Cartridge Syringe	20	1.4%
Lancet	15	1.0%
Dental Instruments/Other	15	1.0%
Blood Gas Syringe	14	1.0%
Biopsy/Other Needles	11	0.7%
Razor	10	0.7%
Test Tubes/Other Glass	7	0.5%
Huber Needle	3	0.2%
Total	1473	100.0%

### **Review of Winged Steel Needle Information**

A survey by the International Safety Center in 58 teaching and non-teaching hospitals revealed the winged steel infusion needles to account for an incidence rate of 6.7% and the United States National Surveillance System for Health Care Workers (NASH) identified winged steel needles as responsible for 12% of needlestick injuries<sup>2</sup> One author states that winged infusion needles are overused for phlebotomy; are more costly than other phlebotomy devices; increase the risk of hemolysis of blood; do not cause less discomfort to the patient; and can cause needlestick injuries.<sup>2</sup> An efficacy study by the University of Tokyo Hospital found safety winged steel needles reduced cases of needlestick injuries and estimated that 76.5% of safety winged needle injuries occurred because the “safety mechanism was not activated”<sup>3</sup> A 1,190 bed acute care hospital conducted a study of sharps injuries before and after implementation of a safety

resheathable winged steel needle with results showing a winged steel needle injury rate decline from 13.41 to 6.41 per 100,000 (relative risk 0.48; 95% C.I. 0.31 to 0.73).<sup>3</sup> Safety winged steel needle injuries occurred most often before activation of the device (39%), 32% were due to the healthcare worker not activating the device; 21% occurred after activation; and 4% were due to incorrect activation.<sup>4</sup> Texas winged steel needle injuries among governmental entities (figure 3), ranged from 6.23% to 10% of total injuries per year over 6 years of injury reporting. However, in review of injuries to Registered Nurses for the year 2006, it was found that 43 (12%) of 348 RN injuries were sustained in the use of a winged steel needle (table 12). Table 13 shows seventy-five percent of the 99 Texas winged steel needles injuries in 2006, **occurred with safety engineered winged steel needles**. The winged steel needle (butterfly), even if safety engineered, is obviously a device with sharps injury risks.

Figure 3. Winged Steel Needles Involved In Sharps Injuries in Texas

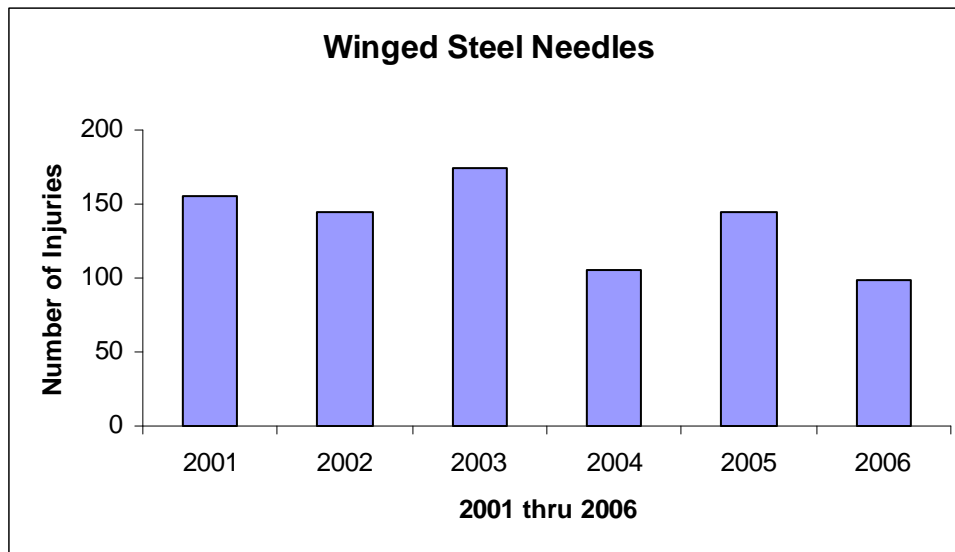


Table 12. Winged Steel Needle Injuries 2006 by Job

Job Classification	Number	Percent
Registered Nurse	43	43.4%
Lab Tech/Phlebotomist/IV Team	22	22.2%
ER, OR, Rad, Resp Techs	9	9.1%
Aide (CNA, HHA, Orderly)	8	8.1%
LVN	6	6.1%
Other/Unknown	4	4.0%
Housekeeper/Laundry	3	3.0%
CRNA/NP	1	1.0%
MD/DO	1	1.0%
Physical Therapist	1	1.0%
School Personnel (not nurse)	1	1.0%
<b>Total</b>	99	100.0%

Table 13. Safety Engineered Status of Winged Steel Needles

Safety Engineered	Number	Percent
Yes	74	74.7%
No	18	18.2%
Unknown	7	7.1%
<b>Total</b>	99	100.0%

### **Suture Needle Injuries**

Twenty-two percent of total injuries reported in 2006 were sustained by contact with a suture needle (table 11). Table 14 depicts suture needle injuries by job title with Intern/Resident and Attending Physicians sustaining 54% of the injuries related to suture needles. Table 15 shows 73% of suture needles were **NOT safety engineered**.

Table 14. Suture Needle Injuries by Job Title

<b>Job Classification</b>	<b>Number</b>	<b>Percent</b>
Intern/Resident	116	35.7%
Attending Physician (MD/DO)	57	17.5%
OR/Surgical Tech	55	16.9%
Medical Student	31	9.5%
RN	20	6.2%
Other/Unknown	14	4.3%
Physician Assistant	11	3.4%
Other Tech	5	1.5%
Other Student	5	1.5%
Dental	4	1.2%
LVN	4	1.2%
Fellow	3	0.9%
<b>Total</b>	<b>325</b>	<b>100%</b>

Table 15. Safety Engineered Status of Suture Needles

<b>Safety Engineered</b>	<b>Number</b>	<b>Percent</b>
Yes	8	2.5%
No	238	73.2%
Unknown	79	24.3%
<b>Total</b>	<b>325</b>	<b>100.0%</b>

### **Worksite Safety Controls**

Safety engineered sharps devices, annual bloodborne pathogen education, glove use, hepatitis B vaccine series, and sharps containers placed appropriately and not overfilled, are required bloodborne pathogen regulations.

### **Safety Engineered Sharps Devices**

As seen in table 16, forty-seven percent of injuries in 2006 occurred with devices that were not safety engineered.

Table 16. Texas Sharps Injuries 2006

<b>Was Device Safety Engineered?</b>	<b>Number</b>	<b>Percent</b>
No	692	47.0%
Yes	439	29.8%
Unknown/Missing	342	23.3%
<b>Total</b>	<b>1473</b>	<b>100.0%</b>

Over the past 6 years, there has been a decrease in total number of sharps injuries reported. As depicted in figure 4, there has been an increase in the use of safety engineered devices. Tables 17 and 18 display the activation status of devices at the time of the sharps injury. However it must be noted that there is a high percentage of missing information (not submitted) in tables 16, 17, and 18.

Figure 4. Number of Safety Engineered Sharps Over Six Years

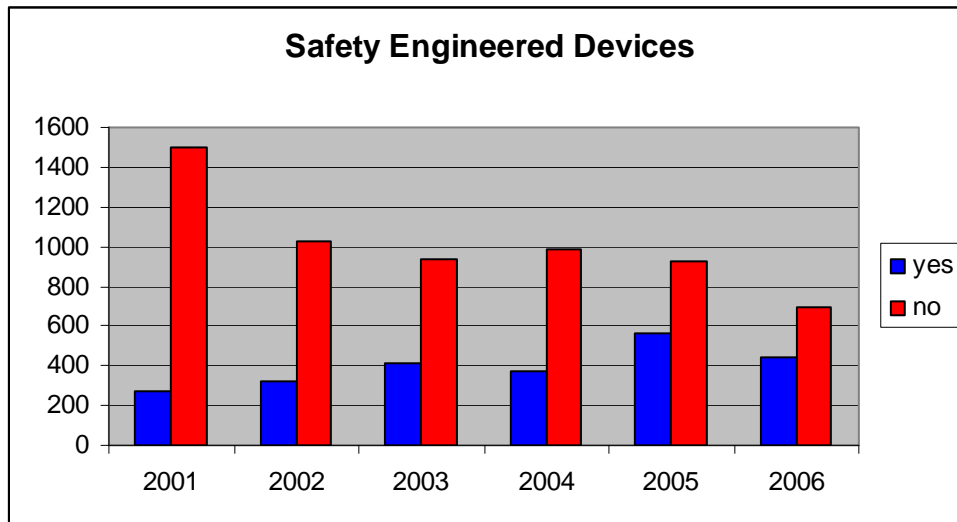


Table 17. Protective Device Activation 2006

Protective Mechanism Activated	Number		Percent	
Missing/Unknown information		874		59.3%
No		471		32.0%
Yes, Partially		66		4.5%
Yes, Fully		62		4.2%
<b>Total</b>		<b>1473</b>		<b>100.0%</b>

Table 18. Phase of Device Activation

At what phase of device activation did injury occur?	Number	Percent
Unknown	1034	70.2%
Before	234	15.9%
During	126	8.6%
After	79	5.4%
<b>Total</b>	<b>1473</b>	<b>100.0%</b>

**Glove Use, Hepatitis B Vaccine, Annual Bloodborne Pathogen Education, and Available Sharps Container**

Other worksite safety controls shown in table 19, reflect 88-93 % compliance in glove use at time of injury, hepatitis B series completed, bloodborne pathogen education, and the availability of the sharps container.

Table 19. Worksite Safety Controls

Compliance with Worksite Safety Controls	Glove Use At Time of Injury		Hepatitis B Series Completed		Received Bloodborne Pathogen Education In Past 12 Months		Availability Of Sharps Container	
	Number	(%)	Number	(%)	Number	(%)	Number	(%)
<b>Yes</b>	1289	87.5	1320	89.6	1370	93.0	1374	93.3
<b>No</b>	162	11.0	67	4.5	53	3.6	49	3.3
<b>Unknown</b>	22	1.5	86	5.8	50	3.4	50	3.4

## Conclusions:

1. There has been an increase in the use of safety engineered devices.
2. Injuries have continued to occur with devices that are safety engineered.
3. There has not been an increase in the use of safety engineered suture needles.

## Recommendations

- I. Healthcare facility tracking and monitoring of sharps injuries related to:
  1. Winged steel needles and suture needles
  2. Safety engineered status of devices
  3. Employee correct usage/activation of safety device and the
  4. Success of quality teams work in the maintenance of a safe work climate.
- II. Encouragement of employee reporting of sharps injuries in a non-punitive environment.

## References:

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