

VIII. APPENDIX - TABLES

TABLE VIII-1

DISABLING WORK INJURIES IN LOGGING
BY DETAILED ACCIDENT TYPE AND AGENT, CALIFORNIA, 1970

| Accident Type and Agent | No. of Injuries |
|--|--------------------|
| <u>Struck by or striking against:</u> | <u>386</u> |
| Hand tools in use | |
| Chain saw | 113 |
| Power saw | 17 |
| Axe | 6 |
| Jack | 2 |
| Other | 2 |
| Other objects while handling | |
| Truck trailer | 5 |
| Log | 4 |
| Tree | 2 |
| Other | 7 |
| Moving equipment other than motor vehicles | |
| Yarding equipment | 11 |
| Other | 7 |
| Falling or flying objects | |
| Branch | 43 |
| Tree | 39 |
| Log | 17 |
| Choker | 2 |
| Rock | 2 |
| Other | 7 |
| Moving or rolling objects | |
| Log | 31 |
| Rock | 3 |
| Hand tool, n.e.c.* | 14 |

TABLE VIII-1 (CONTINUED)

DISABLING WORK INJURIES IN LOGGING
BY DETAILED ACCIDENT TYPE AND AGENT, CALIFORNIA, 1970

| Accident Type and Agent | No. of Injuries |
|------------------------------------|--------------------|
| Stationary objects | |
| Log | 8 |
| Tree | 3 |
| Branch | 2 |
| Yarding equipment | 2 |
| Other | 11 |
| Contact with sharp object | 7 |
| Other | 19 |
| <u>Fall or slip</u> | <u>212</u> |
| On same level | |
| Using chain saw | 20 |
| Walking on uneven ground | 19 |
| Setting, pulling chokers | 18 |
| Walking on littered ground | 16 |
| Running, walking from falling tree | 10 |
| Walking on wet, slippery ground | 6 |
| Walking through brush | 4 |
| Loading truck | 2 |
| Other | 15 |
| From elevated level | |
| Log | 37 |
| Truck | 8 |
| Bank | 6 |
| Tractor | 4 |
| Branch | 3 |
| Stump | 3 |
| Other | 3 |
| While stepping on, off, or over | |
| Log | 17 |
| Tractor | 12 |
| Truck | 9 |

TABLE VIII-1 (CONTINUED)

DISABLING WORK INJURIES IN LOGGING
BY DETAILED ACCIDENT TYPE AND AGENT, CALIFORNIA, 1970

| Accident Type and Agent | No. of Injuries |
|---|--------------------|
| <u>Accident involving moving motor vehicle</u> | <u>102</u> |
| Struck by objects set in motion by | 41 |
| Overturning, running off road | 14 |
| Strain or overexertion in operating | 9 |
| Fall from | 7 |
| Run over or struck by | 7 |
| Contact with vehicle or object within vehicle | 6 |
| Caught between vehicle and other object | 5 |
| Collision with fixed object | 5 |
| Collision with other moving vehicle | 5 |
| Shifting load or object falling within vehicle | 3 |
| <u>Strain or overexertion</u> | <u>85</u> |
| <u>Lifting or lowering</u> | |
| Chain saw | 4 |
| Log | 4 |
| Power saw | 2 |
| Tire | 2 |
| Other | 12 |
| Using hand tool | |
| Chain saw | 10 |
| Axe | 2 |
| Other | 5 |
| Pushing or pulling object | |
| Cable | 4 |
| Choker | 4 |
| Other | 4 |
| Setting choker | 12 |
| Holding or carrying object | 6 |
| Sudden or awkward motion | 5 |
| Other | 9 |

TABLE VIII-1 (CONTINUED)

DISABLING WORK INJURIES IN LOGGING
BY DETAILED ACCIDENT TYPE AND AGENT, CALIFORNIA, 1970

| Accident Type and Agent | No. of Injuries |
|--|--------------------|
| <u>Caught in or between</u> | <u>36</u> |
| Choker | 10 |
| Log | 6 |
| Tractor | 3 |
| Tree | 2 |
| Tractor | 2 |
| Truck | 2 |
| Other | 11 |
| <u>Foreign substance in eye</u> | <u>23</u> |
| Branch | 13 |
| Wood chip | 4 |
| Dust | 2 |
| Other | 4 |
| <u>Bite, sting</u> | <u>11</u> |
| <u>Contact with welding flash, toxic, or noxious substance</u> | <u>7</u> |
| <u>Hot environment or substance</u> | <u>4</u> |
| <u>Cardiovascular strain or disease</u> | <u>2</u> |
| <u>Other, and type not stated</u> | <u>13</u> |
| Total | <u>881</u> |

TABLE VIII-1 (CONTINUED)
 DISABLING WORK INJURIES IN LOGGING
 BY DETAILED ACCIDENT TYPE AND AGENT, CALIFORNIA, 1970

| <u>SUMMARY</u> | | |
|---|--------------------|--------------|
| Accident Type | No. of Injuries | Percentage |
| Struck by or striking against | 386 | 43.8 |
| Fall or slip | 212 | 24.1 |
| Accident involving moving motor vehicle | 102 | 11.6 |
| Strain or overexertion | 85 | 9.6 |
| Caught in or between | 36 | 4.1 |
| Foreign substance in eye | 23 | 2.6 |
| Bite, sting | 11 | 1.2 |
| Contact with welding flash, toxic, or noxious substances | 7 | 0.8 |
| Hot environment or substance | 4 | 0.5 |
| Cardiovascular strain or disease | 2 | 0.2 |
| Other and type not stated | 13 | 1.5 |
| Total | <u>881</u> | <u>100.0</u> |

* not elsewhere classified
 Derived from reference 16

TABLE VIII-2
OREGON LOGGING INDUSTRY FATALITIES

| Source | Year of Occurrence | | | | | | | | Total | Percentage |
|-------------------------|--------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|--------------|
| | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | | |
| Falling/flying objects | 19 | 15 | 15 | 11 | 11 | 15 | 9 | 19 | 114 | 37.4 |
| Rolling/moving logs | 13 | 8 | 19 | 13 | 9 | 12 | 9 | 12 | 95 | 31.1 |
| Chain saws | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| Slips, trips, and falls | 2 | 0 | 3 | 1 | 1 | 0 | 1 | 0 | 8 | 2.6 |
| Moving vehicles | 11 | 9 | 1 | 3 | 10 | 14 | 13 | 14 | 75 | 24.6 |
| Ergonomic violation | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 0.7 |
| Miscellaneous | 0 | 0 | 2 | 0 | 5 | 0 | 1 | 3 | 11 | 3.6 |
| Total | <u>45</u> | <u>32</u> | <u>40</u> | <u>28</u> | <u>37</u> | <u>42</u> | <u>33</u> | <u>48</u> | <u>305</u> | <u>100.0</u> |

Derived from reference 24

TABLE VIII-3

FLORIDA INJURY DATA
 LOGGING CAMPS AND LOGGING CONTRACTORS
 AS OF SEPTEMBER 1974

| Injury Type | No. of Injuries | Percentage |
|-------------------------------------|--------------------|--------------|
| Struck against | 126 | 25.5 |
| Struck by | 201* | 40.8 |
| Caught in/under/between | 25 | 5.0 |
| Fall on same level | 23 | 4.7 |
| Fall to different level | 23 | 4.7 |
| Overexertion or bodily reaction | 59 | 12.0 |
| Contact with temp/press extreme | 6 | 1.2 |
| Contact with toxic substances, etc | 8 | 1.6 |
| Motor vehicle and aircraft accident | 19 | 3.9 |
| Other | 3 | 0.6 |
| TOTAL | <u>493</u> | <u>100.0</u> |

* 87 from falling/flying objects
 Derived from reference 17

TABLE VIII-4
 NORTHEASTERN US
 DISABLING WORK INJURIES (LOGGING)
 1973, 1974

| Agent | No. of Injuries | Percentage |
|------------------------|--------------------|--------------|
| Falling/flying objects | 57 | 43.2 |
| Rolling/moving logs | 6 | 4.5 |
| Chain saws | 42 | 31.8 |
| Slips, trips, falls | 10 | 7.6 |
| Moving vehicle | 2 | 1.5 |
| Ergonomic (motion) | 7 | 5.3 |
| Insect bite | 5 | 3.8 |
| Tool | 2 | 1.5 |
| Other | 1 | 0.8 |
| Total | <u>132</u> | <u>100.0</u> |

Derived from (Maine Industrial Accident Commission Data, written communication, 1975)

TABLE VIII-5

INSURANCE COMPANY INJURY CAUSE AND COST ANALYSIS
FOR WORKMEN'S COMPENSATION CLASSIFICATION 2702 (LOGGING)
ANALYSIS BY ACCIDENT TYPE

| Accident Type and Major Cause | No. of Injuries | Percent of Injuries | Cost | Percent of Cost |
|----------------------------------|--------------------|------------------------|--------------------|--------------------|
| Struck by falling objects | <u>1,604</u> | <u>19.6</u> | <u>\$5,591,018</u> | <u>41.9</u> |
| Trees, branches | 1,153 | | 4,681,980 | |
| Logs | 185 | | 588,984 | |
| Objects | 36 | | 76,374 | |
| Lumber or timber | 19 | | 34,428 | |
| Other | 211 | | 209,252 | |
| Struck by moving objects | <u>1,183</u> | <u>14.5</u> | <u>\$1,859,983</u> | <u>13.9</u> |
| Logs | 342 | | 771,580 | |
| Trees, branches | 422 | | 591,664 | |
| Vehicles, misc. | 8 | | 103,931 | |
| Other | 411 | | 392,808 | |
| Handling | <u>587</u> | <u>7.2</u> | <u>\$ 657,168</u> | <u>4.9</u> |
| Logs | 148 | | 281,851 | |
| Board, plank, plywood | 75 | | 98,073 | |
| Trees, branches | 56 | | 43,481 | |
| Chain saw | 29 | | 34,067 | |
| Other | 279 | | 199,696 | |
| Cut by | <u>1,455</u> | <u>17.8</u> | <u>\$ 636,106</u> | <u>4.8</u> |
| Chain saw | 864 | | 387,233 | |
| Saw-misc (wood) | 369 | | 159,971 | |
| Axes (hatchets) | 93 | | 44,219 | |
| Other | 129 | | 44,683 | |
| Collision or Upset | <u>161</u> | | <u>\$ 483,181</u> | <u>3.6</u> |
| Trucks and trailers (semi) | 58 | | 197,445 | |
| Contractors' vehicles | 4 | | 51,861 | |
| Trucks, straight | 12 | | 46,379 | |
| Automobile | 10 | | 33,721 | |
| Skidder | 10 | | 30,417 | |
| Other | 67 | | 123,358 | |
| Total | <u>4,990</u> | | <u>\$9,227,456</u> | |

Derived from (M Pearson, written communication, November 1974)

TABLE VIII-6

AMERICAN PULPWOOD ASSOCIATION
 NORTHEASTERN TECHNICAL DIVISION
 CUMULATIVE YEAR TO DATE LOST TIME LOGGING INJURIES

| Source | Number of Cutting Injuries | |
|------------------------|----------------------------|------------------|
| | December 1972 | December 1973 |
| Falling limbs or stubs | 4 | 15 |
| Trees, logs, or bolts | 10 | 20 |
| Chain saws | 19 | 22 |
| Slips, trips and falls | 2 | 13 |
| Hand tools | 1 | 0 |
| Machinery | 2 | 4 |
| Other | 2 | 9 |
| Total | 40 | 83 |

From (RP Sarna, written communication, February 1976)

TABLE VIII-7

DISABLING WORK INJURIES TO FELLERS BY DETAILED
ACCIDENT TYPE AND AGENT, CALIFORNIA, 1970

| Accident Type and Agent | Number of Injuries | Percentage |
|---------------------------------------|-----------------------|------------|
| <u>Struck by or striking against</u> | <u>155</u> | 56.7 |
| <u>Hand tool, in using</u> | | |
| Chain saw | 66 | |
| Power saw | 8 | |
| Axe | 1 | |
| Falling/flying object | | |
| Branch | 30 | |
| Tree | 20 | |
| Log | 4 | |
| Other | 4 | |
| Moving/rolling object | | |
| Log | 6 | |
| Rock | 1 | |
| Bumping into stationary object | | |
| Log | 2 | |
| Tree | 1 | |
| Other | 3 | |
| Contact with sharp object | 6 | |
| Other | 3 | |
| <u>Fall or slip</u> | <u>74</u> | 27.0 |
| <u>Fall or slip on the same level</u> | | |
| Running, walking from falling tree | 10 | |
| Setting, pulling, unhooking choker | 7 | |
| Using chain saw | 7 | |
| Walking on littered ground | 6 | |
| Walking on uneven ground | 6 | |
| Walking on steep ground | 3 | |
| Loading truck | 2 | |
| Walking on wet, slippery ground | 2 | |
| Walking through brush | 2 | |
| Other | 8 | |

TABLE VIII-7 (CONTINUED)

DISABLING WORK INJURIES TO FALLERS BY DETAILED
ACCIDENT TYPE AND AGENCY, CALIFORNIA, 1970

| Accident Type and Agent | Number of Injuries | Percentage |
|---|--------------------|--------------|
| Fall from elevation | | |
| Log | 11 | |
| Other | 4 | |
| Fall or slip while stepping on, off, or over log | 6 | |
| <u>Foreign substance in eye</u> | <u>17</u> | 6.2 |
| Branch | 8 | |
| Wood chip | 4 | |
| Dust | 2 | |
| Other | 3 | |
| <u>Strain or overexertion</u> | <u>16</u> | 5.8 |
| Using hand tool | 8 | |
| Chain saw | 6 | |
| Other | 2 | |
| Lifting or lowering object | 6 | |
| Chain saw | 4 | |
| Other | 2 | |
| Pulling on choker | 2 | |
| <u>Caught in or between</u> | <u>4</u> | 1.5 |
| Cable | 1 | |
| Log | 1 | |
| Rigging | 1 | |
| Tree | 1 | |
| Contact with poison oak | <u>2</u> | 0.7 |
| Insect bite | <u>2</u> | 0.7 |
| Other | <u>2</u> | 0.7 |
| Accident type not stated | <u>2</u> | 0.7 |
| Total | <u>274</u> | <u>100.0</u> |

Derived from reference 16

TABLE VIII-8
 LOGGING INJURIES, AMERICAN PULPWOOD ASSOCIATION
 NORTHEASTERN DIVISION, 1958-72

| Agent | Cutting | Hauling | Other | Injuries Total | % |
|-----------------------------|--------------|------------|------------|-------------------|--------------|
| Falling limbs and studs | 144 | 11 | 2 | 157 | 7.1 |
| Trees, logs, bolts | 386 | 82 | 28 | 496 | 22.4 |
| Chainsaws | 560 | 14 | 10 | 584 | 26.4 |
| Slips and falls | 166 | 72 | 73 | 311 | 14.1 |
| Hand tools | 126 | 49 | 31 | 206 | 9.3 |
| Machinery | 47 | 54 | 23 | 124 | 5.6 |
| Horses and equipment | 44 | 19 | 9 | 72 | 3.3 |
| Infections, minor wounds | 27 | 9 | 12 | 48 | 2.2 |
| Other | 106 | 30 | 76 | 212 | 9.6 |
| Total | <u>1,606</u> | <u>340</u> | <u>264</u> | <u>2,210</u> | <u>100.0</u> |

Derived from reference 3

TABLE VIII-9

WORK FATALITIES IN LOGGING BY DETAILED ACCIDENT TYPE
CALIFORNIA, 1966-72

| Accident Type | No. of Fatalities |
|--|----------------------|
| Struck by or striking against | <u>57</u> |
| Falling tree, snag, branch | <u>36</u> |
| Log rolling downhill | 6 |
| Log falling from truck | 4 |
| Log being skidded, yarded | 3 |
| Flying limb | 2 |
| Log rolling off deck | 1 |
| Bulldozer blade fell on | 1 |
| Flying wood | 1 |
| Loading boom fell on | 1 |
| Log swinging | 1 |
| Struck by falling block | 1 |
| Accident involving moving motor vehicle | <u>27</u> |
| Overturning, running off road | <u>13</u> |
| Caught between moving vehicle and other object | 4 |
| Collision with other moving vehicle | 3 |
| Tractor ran over | 3 |
| Log crashed into truck cab | 1 |
| Log rolled on tractor | 1 |
| Log swung against tractor | 1 |
| Tree fell on tractor | 1 |
| Caught in or between | <u>13</u> |
| Two trees | <u>4</u> |
| Log and tractor | 2 |
| Two logs | 2 |
| Loader and trailer | 1 |
| Loader and chain saw | 1 |
| Log and power saw | 1 |
| Log and truck | 1 |
| Snag and log | 1 |
| Heart attack | <u>3</u> |
| Heat stroke | <u>1</u> |
| Total | <u>101</u> |

Derived from reference 16

TABLE VIII-10

SUMMARY OF LOGGING FATALITIES FOR WASHINGTON (1968, 1970-72)
AND CALIFORNIA (1968,1971)*

| OCCUPATION OF VICTIM | | | | | | | | | | | | | |
|----------------------|------------------|--------------------|------------------------|--|--|--|--|--|--|--|--|--|--|
| A = Feller | E = Log Loader | J = Laborer | N = Equipment Operator | | | | | | | | | | |
| B = Bucker | F = Skidder | K = Powderman | O = Hauling Engr | | | | | | | | | | |
| C = Rigger (Misc) | G = Chaser | L = Tag & Tallyman | P = Observer | | | | | | | | | | |
| D = Choker Setter | H = Truck Driver | M = Grader | Q = Other | | | | | | | | | | |

| Fatality Cause | Total | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q |
|---|-------|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Felling/bucking operations | | | | | | | | | | | | | | | | | | |
| Struck by felled tree (self) | 2 | 2 | | | | | | | | | | | | | | | | |
| Struck by felled tree (other) | 10 | 3 | 3 | | 1 | | | | 1 | 1 | | | | | | 1 | | |
| Struck by tree knocked | 6 | 6 | | | | | | | | | | | | | | | | |
| Struck by snag | 9 | 7 | | | 1 | 1 | | | | | | | | | | | | |
| Struck by flying timber (widowmaker) | 14 | 11 | 1 | | 1 | | | | | | | | | | | | | |
| Struck by uprooted tree | 3 | 1 | 1 | | 1 | | | | | | | | | | | | | |
| Struck by lodged tree | 5 | 4 | 1 | | | | | | | | | | | | | | | |
| Struck by kickback | | | | | | | | | | | | | | | | | | |
| Struck by tree left standing partially cut | 4 | 4 | | | | | | | | | | | | | | | | |
| Struck by slab | 2 | 2 | | | | | | | | | | | | | | | | |
| Trees falling uphill/bckwrđ | 12 | 11 | 1 | | | | | | | | | | | | | | | |
| Skidding/yarding operations | | | | | | | | | | | | | | | | | | |
| Struck by rolling log/tree | 17 | 3 | 6 | 3 | 3 | | | | | | | | | 1 | | | | 1 |
| Hit/log hit by other thing | 3 | 1 | | | 1 | | | | 1 | | | | | | | | | |
| Hit/lot dropped during loading | 14 | 1 | | 1 | | 3 | | 2 | 7 | | | | | | | | | |
| Struck by log being yarded | 10 | | | 2 | 7 | | | | 1 | | | | | | | | | |
| Struck by tractor-skidded log | 1 | | | | | | 1 | | | | | | | | | | | |
| Struck by rigging incl choker | 4 | | | | 3 | | | 1 | | | | | | | | | | |
| Struck by log movement during choker setting | 4 | | | 2 | 2 | | | | | | | | | | | | | |
| Struck by springback of trees released from tension | 1 | | | | 1 | | | | | | | | | | | | | |
| Struck by chunk or timber dropped from rigging | 2 | | | | 2 | | | | | | | | | | | | | |
| Struck by tree felled by winching cable | 1 | | | | 1 | | | | | | | | | | | | | |
| Struck by swinging log | 1 | | | | | | 1 | | | | | | | | | | | |

TABLE VIII-10 (CONTINUED)
 SUMMARY OF LOGGING FATALITIES FOR WASHINGTON (1968, 1970-72)
 AND CALIFORNIA (1968,1971)*

| OCCUPATION OF VICTIM | | | | | | | | | | | | | | | | | | |
|-------------------------------|-------------------|------------------|--------------------|------------------------|-----------|-----------|----------|----------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | A = Feller | E = Log Loader | J = Laborer | N = Equipment Operator | | | | | | | | | | | | | | |
| | B = Bucker | F = Skidder | K = Powderman | O = Hauling Engr | | | | | | | | | | | | | | |
| | C = Rigger (Misc) | G = Chaser | L = Tag & Tallyman | P = Observer | | | | | | | | | | | | | | |
| | D = Choker Setter | H = Truck Driver | M = Grader | Q = Other | | | | | | | | | | | | | | |
| Fatality Cause | Total | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q |
| Transport operations | 15 | | | | | | | | 13 | | | | | | | | 2 | |
| Agents | | | | | | | | | | | | | | | | | | |
| Slips, trips and falls | 3 | 1 | | | 2 | | | | | | | | | | | | | |
| Heart attack | 3 | 1 | | | 1 | | | | | | | | | | | | | |
| Drowning | 1 | | 1 | | | | | | | | | | | | | | | |
| Falls from logs | 1 | | 1 | | | | | | | | | | | | | | | |
| Struck by log hit by vehicle | 1 | 1 | | | | | | | | | | | | | | | | |
| Chain saw | 5 | 3 | 1 | | | | | | | | | | | | | | | |
| Hit by tree felled by vehicle | 1 | | | | 1 | | | | | | | | | | | | | |
| Struck by vehicle | 26 | | | | 10 | 6 | 1 | 2 | 7 | | | | | | | | | |
| Electrocution | 1 | | | | | 1 | | | | | | | | | | | | |
| Loss of vehicle control | 20 | | | | | 3 | 4 | | 9 | | | | 2 | 1 | | | | 1 |
| Powder blast | 1 | | | | | | | | | | | 1 | | | | | | |
| Snag (direct or indirect) | 13 | 11 | | | 1 | 1 | | | | | | | | | | | | |
| Location | | | | | | | | | | | | | | | | | | |
| Felling/bucking area | 72 | 55 | 13 | | 1 | | | | | 1 | | | | | | 1 | 1 | |
| Yarding skidding area | 50 | | | 8 | 35 | | | 5 | | | | | | | | 1 | | |
| Landing area | 40 | 3 | 1 | 1 | 13 | 1 | 8 | 11 | | 1 | | 1 | | | | | | 2 |
| Total | 184 | 60 | 13 | 8 | 37 | 15 | 6 | 8 | 25 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 |

* NOTE: Table VIII-10 summarizes 184 fatality reports and many of the fatalities have been used more than once in showing relationships. Only the total fatalities, as a function of occupation, for each cause are correct; the totaling of vertical columns is not intended.

Derived from reference 3

TABLE VIII-11

INSURANCE COMPANY INJURY CAUSE AND COST ANALYSIS
FOR WORKMEN'S COMPENSATION CLASSIFICATION 2702 (LOGGING)
ANALYSIS BY CAUSE

| Major Cause and Accident Type | No. of Injuries | Percent of All Injuries | Cost | Percent of Cost |
|----------------------------------|--------------------|----------------------------|--------------------|--------------------|
| Trees, branches | <u>1,955</u> | <u>23.9</u> | <u>\$5,751,207</u> | <u>43.1</u> |
| Struck by | | | | |
| falling objects | 1,153 | | 4,681,980 | |
| Struck by | | | | |
| moving objects | 422 | | 591,664 | |
| Contact with | 101 | | 125,051 | |
| Struck by | | | | |
| flying objects | 47 | | 88,431 | |
| Caught between | 33 | | 61,638 | |
| Fall from elev. | 12 | | 55,613 | |
| Handling | 56 | | 43,481 | |
| Other | 131 | | 103,349 | |
| Logs | <u>1,038</u> | <u>12.7</u> | <u>\$2,052,076</u> | <u>15.4</u> |
| Struck by | | | | |
| moving objects | 342 | | 771,580 | |
| Struck by | | | | |
| falling objects | 185 | | 588,984 | |
| Handling | 148 | | 281,851 | |
| Fall from elev. | 22 | | 98,557 | |
| Caught between | 115 | | 82,852 | |
| Other | 226 | | 228,252 | |
| Chain saw | <u>1,096</u> | <u>13.4</u> | <u>\$ 542,110</u> | <u>4.1</u> |
| Cut by | 864 | | 387,233 | |
| Kick back | 103 | | 56,783 | |
| Other | 129 | | 98,094 | |
| Person injured | <u>142</u> | | <u>\$ 409,052</u> | <u>3.1</u> |
| Heart attack | 8 | | 236,432 | |
| Overexertion | 108 | | 138,449 | |
| Other | 26 | | 34,171 | |
| Other | <u>3,849</u> | | | |
| Total | <u>8,180</u> | | | |

Derived from (M Pearson, written communication, November 1974)

TABLE VIII-12

DISABLING WORK INJURIES IN LOGGING
BY DETAILED AGENCY, CALIFORNIA, 1970

| Agent | No. of Injuries | Percentage |
|-----------------------------------|--------------------|------------|
| Hand tools | <u>219</u> | 24.9 |
| Chain saw | 158 | |
| Power saw, n.e.c.* | 27 | |
| Axe | 10 | |
| Saw, hand | 4 | |
| Jackhammer, tamper | 3 | |
| Hammer, hand | 2 | |
| Peeling bar | 2 | |
| Wedge | 2 | |
| Wrench | 2 | |
| Other | 9 | |
| Logs, trees, lumber | <u>201</u> | 22.8 |
| Log | 112 | |
| Branch | 47 | |
| Tree | 41 | |
| Lumber | 1 | |
| Vehicles | <u>151</u> | 17.1 |
| Tractor | 79 | |
| Truck | 37 | |
| Road grader | 12 | |
| Log loader | 11 | |
| Truck trailer | 9 | |
| Automobile | 2 | |
| Dolly | 1 | |
| Working surfaces | <u>137</u> | 15.6 |
| Ground--outdoors | 107 | |
| Truck bed | 12 | |
| Truck running board | 7 | |
| Log deck, ramp | 4 | |
| Tree, branch | 4 | |
| Elevated working surface, n.e.c.* | 2 | |
| Staging | 1 | |

TABLE VIII-12 (CONTINUED)

DISABLING WORK INJURIES IN LOGGING
BY DETAILED AGENCY, CALIFORNIA, 1970

| Agent | No. of Injuries | Percentage |
|--|-----------------|--------------|
| Hoisting, rigging, and loading equipment | <u>90</u> | 10.2 |
| Choker | 59 | |
| Yarding equipment, n.e.c.* | 25 | |
| Shovel loader | 6 | |
| Chemicals, hot or injurious substances | <u>9</u> | 1.0 |
| Dust | 3 | |
| Poison oak | 3 | |
| Welding flash | 2 | |
| Dynamite | 1 | |
| Machines | <u>8</u> | 0.9 |
| Welding machine | 2 | |
| Other | 6 | |
| Containers | <u>5</u> | 0.6 |
| Other agencies | <u>46</u> | 5.2 |
| Insect | 11 | |
| Rock | 5 | |
| Binder, wrapper | 4 | |
| Brush | 3 | |
| Metal stock | 3 | |
| Tire | 3 | |
| Person injured (heart attack) | 2 | |
| Pipe | 2 | |
| Stock part | 2 | |
| Other | 11 | |
| Agency not stated | <u>15</u> | 1.7 |
| Total | <u>881</u> | <u>100.0</u> |

* not elsewhere classified

Derived from reference 16

TABLE VIII-13

DISABLING WORK INJURIES TO FELLERS
BY DETAILED AGENCY, CALIFORNIA, 1970

| Agency | No. of Injuries | Percentage |
|---------------------------|--------------------|--------------|
| Hand tools | <u>112</u> | 40.9 |
| Chain saw | <u>90</u> | |
| Power saw, n.e.c.* | 15 | |
| Axe | 2 | |
| Other | 5 | |
| Logs, trees, lumber | <u>79</u> | 28.8 |
| Branch | <u>26</u> | |
| Log | 26 | |
| Tree | 25 | |
| Lumber | 2 | |
| Working surfaces | <u>53</u> | 19.3 |
| Ground--outdoors, n.e.c.* | <u>47</u> | |
| Tree, branch | 4 | |
| Log | 1 | |
| Staging | 1 | |
| Chokers | <u>12</u> | 4.4 |
| Vehicles | <u>5</u> | 1.8 |
| Tractor | <u>4</u> | |
| Log loader | 1 | |
| Other | <u>9</u> | 3.3 |
| Agency not stated | <u>4</u> | 1.5 |
| Total | <u>274</u> | <u>100.0</u> |

* not elsewhere classified

Derived from reference 16

TABLE VIII-14

STATE OF MAINE
1972 INJURIES BY ACCIDENT TYPE
LOGGING CAMPS AND LOGGING CONTRACTORS

| Accident Type | No. of Injuries | Percentage |
|---|--------------------|--------------|
| Struck against/by | 455 | 61.7 |
| Fall from/on | 72 | 9.8 |
| Caught in/under/between | 49 | 6.6 |
| Overexertion | 43 | 5.8 |
| Contact with extreme temperatures | 4 | 0.5 |
| Contact with substances by inhalation/ingestion/absorption | 3 | 0.4 |
| Contact with electric current | 0 | 0.0 |
| Motor vehicle accident | 9 | 1.2 |
| Other | 79 | 10.7 |
| Unknown/unclassifiable | 23 | 3.1 |
| Total | <u>737</u> | <u>99.8*</u> |

* Not 100% due to rounding off
Derived from reference 24

TABLE VIII-15

PENNSYLVANIA WORK INJURIES
LUMBER AND WOOD PRODUCTS, APRIL 1973

| Type | No. of Injuries |
|-----------------------------------|--------------------|
| Striking against objects | 25 |
| Struck by objects | 66 |
| Caught in, on, or between objects | 11 |
| Falls on same level | 4 |
| Falls to different level | 3 |
| Slips (not falls) or overexertion | 26 |
| Other | 1 |
| Total (includes one fatality) | <u>136</u> |

Derived from reference 26

TABLE VIII-16

DISABLING WORK INJURIES IN LOGGING
BY ACCIDENT TYPE AND AGENCY, CALIFORNIA, 1970

| Accident Type | Total | Machines | Hoisting, Rigging, and Loading Equipment | Vehicles | Hand Tools | Chemicals, Hot, Injurious Substances | Working Surfaces | Logs, Trees, Lumber | Other or Agency not Stated |
|--------------------------------------|------------|----------|--|------------|---------------|---|---------------------|---------------------------|--|
| Struck by or striking against | 386 | 1 | 46 | 15 | 171 | - | 18 | 117 | 18 |
| 78 Fall or slip | 212 | - | 12 | 17 | 4 | - | 117 | 59 | 3 |
| Accident involving moving vehicle | 102 | - | - | 102 | - | - | - | - | - |
| Strain or overexertion | 85 | 2 | 18 | 8 | 23 | - | 1 | 12 | 21 |
| Caught in or between | 36 | 2 | 14 | 7 | 3 | - | 1 | 8 | 1 |
| Foreign substance in eye | 23 | 2 | - | 1 | 14 | - | - | 4 | 2 |
| Other or accident type not stated | 37 | 1 | - | 1 | 4 | 9 | - | 1 | 21 |
| Total | <u>881</u> | <u>8</u> | <u>90</u> | <u>151</u> | <u>219</u> | <u>9</u> | <u>137</u> | <u>201</u> | <u>66</u> |

Derived from reference 16

TABLE VIII-17

WORK FATALITIES* IN LOGGING
BY DETAILED AGENT, CALIFORNIA, 1966-72

| Agent | No. of Fatalities |
|-----------------------------|----------------------|
| Trees, log, branches | <u>60</u> |
| Tree | 36 |
| Log | 18 |
| Branch | 6 |
| Vehicles | <u>32</u> |
| Tractor | 18 |
| Truck | 8 |
| Log loader | 3 |
| Road grader | 3 |
| Hoisting apparatus | <u>5</u> |
| Choker | 1 |
| Haulback line | 1 |
| Loading boom | 1 |
| Yarding equipment, n.e.c.** | 2 |
| Heart attack | <u>3</u> |
| Heat stroke | <u>1</u> |
| Total | <u>101</u> |

* A work fatality is: (1) a death for which a finding and award decision is issued by the Workmen's Compensation Appeals Board; (2) a death for which liability is accepted by the insurance carrier or self-insurer without an Appeals Board determination; (3) a death for which a compromise and release agreement is approved by the Appeals Board in which dependency is the sole issue; (4) a death for which the amount of the compromise settlement either equals or exceeds the commuted value of a findings and award.

** not elsewhere classified

Derived from reference 16

TABLE VIII-18

TYPES OF ACCIDENTS INVOLVING CHAIN SAWS,
 LOGGING, 1970 (CALIFORNIA)

| Accident Type | No. of Injuries |
|--|-----------------|
| Saw kicked back | 67 |
| Struck by falling, flying branch, twig, splinter | 31 |
| Saw slipped while using | 14 |
| Strain in using, handling | 13 |
| Saw struck by branch | 5 |
| Saw slipped from grasp, n.e.c.* | 5 |
| Worker slipped, fell with saw, n.e.c.* | 5 |
| Hand slipped into saw | 3 |
| Chain jumped off saw | 2 |
| Other or type not stated | 13 |
| Total | 158 |

* not elsewhere classified
 Derived from reference 16

TABLE VIII-19

CHAIN SAW ACCIDENTS BY ACTIVITY OF INJURED WORKER,
LOGGING, 1970 (CALIFORNIA)

| Activity | No. of Injuries | Percentage |
|---------------------------------|-----------------|--------------|
| Falling tree | 63 | 39.9 |
| Limbing, trimming tree | 42 | 26.6 |
| Bucking log | 34 | 21.5 |
| Lifting, lowering, carrying saw | 5 | 3.1 |
| Thinning | 5 | 3.1 |
| Brushing out | 3 | 1.9 |
| Other or activity not stated | 6 | 3.8 |
| Total | <u>158</u> | <u>99.9*</u> |

* Not 100% due to rounding
Derived from reference 16

TABLE VIII-20

MAINE LOGGING INJURIES, 1972
ANALYSIS OF MAJOR INJURY SOURCES

| Type | No. of Powered Hand Tool Injuries* | Percent of Total | No. of Plant, Tree and Vegetation Injuries** | Percent of Total |
|-----------------------------|---|------------------------|--|------------------------|
| Struck by | 170 | 87.3 | 157 | 78.5 |
| Struck against | 9 | 4.6 | 6 | 3.0 |
| Rubbed/abraded | 7 | 3.6 | 4 | 2.0 |
| Overexertion | 3 | 1.5 | 13 | 6.5 |
| Fall | 2 | 1.0 | 14 | 7.0 |
| Caught in, under, between | 1 | .5 | 5 | 2.5 |
| All others | 3 | 1.5 | 1 | .5 |
| Total | <u>195</u> | <u>100.0</u> | <u>200</u> | <u>100.0</u> |
| Nature | | | | |
| Cut, laceration, puncture | 184 | 94.5 | 27 | 13.5 |
| Contusion, crushing, bruise | 5 | 2.5 | 65 | 32.5 |
| Fracture | 3 | 1.5 | 36 | 18.0 |
| Sprains, strains | 3 | 1.5 | 33 | 16.5 |
| Amputation | - | - | 1 | .5 |
| Concussion | - | - | 4 | 2.0 |
| Hernia, rupture | - | - | 2 | 1.0 |
| All others | - | - | 32 | 16.0 |
| Total | <u>195</u> | <u>100.0</u> | <u>200</u> | <u>100.0</u> |
| Body part | | | | |
| Upper extremities | 117 | 60.4 | 11 | 5.5 |
| Lower extremities | 61 | 31.0 | 49 | 24.5 |
| Trunk | 10 | 5.0 | 62 | 31.0 |
| Head | 6 | 3.1 | 58 | 29.0 |
| Multiple parts | 1 | .5 | 10 | 5.0 |
| Neck | - | - | 9 | 4.5 |
| All others | - | - | 1 | 0.5 |
| Total | <u>195*</u> | <u>100.0</u> | <u>200**</u> | <u>100.0</u> |

* Accounted for 26% of all logging injuries

** Accounted for 27% of all logging injuries

Derived from reference 25

TABLE VIII-21

QUEBEC LOGGING SAFETY ASSOCIATION INC.

| | 1971 | 1972 | 1973 |
|--|------------|------------|--------------|
| Accidents due to mechanical saw | 251 (34%) | 209 (30%) | 320 (31%) |
| Mechanical saw injuries due to kickback | 221 (88%) | 185 (89%) | 295 (92%) |
| Parts of body injured from mechanical saws | | | |
| Arms | 25 | 26 | 46 |
| Elbows | 1 | 1 | 1 |
| Wrists | 5 | 1 | 4 |
| Hands | 53 | 51 | 65 |
| Fingers | 63 | 42 | 67 |
| Thighs, legs, & knees | 63 | 54 | 90 |
| Feet | 15 | 14 | 12 |
| Toes | 2 | 3 | 5 |
| Ankles | - | 1 | - |
| Skull | 2 | - | 3 |
| Face | 6 | 6 | 5 |
| Torso | 1 | 4 | 8 |
| Multiple | 15 | 6 | 14 |
| | <u>251</u> | <u>209</u> | <u>320</u> |
| Type of work | | | |
| Felling | 31 | 34 | 61 |
| Branching | 113 | 92 | 124 |
| Bucking | 60 | 45 | 87 |
| Clearing | 11 | 9 | 20 |
| Piling | 1 | - | 1 |
| Filing | 2 | - | 1 |
| Skidding | 2 | 1 | - |
| Repairing | - | 2 | - |
| Other operations | 1 | 2 | 1 |
| | <u>221</u> | <u>185</u> | <u>295</u> |
| Injuries due to burns | 2 | 2 | 4 |
| Total number of accidents reported | <u>731</u> | <u>689</u> | <u>1,043</u> |

From (DV Myles, written communication, January 1975)

TABLE VIII-22

FLORIDA LOGGING INJURIES BY AGENT, 1974
JANUARY-SEPTEMBER

| Agent | No. of Injuries |
|---|--------------------|
| Wheeled tractor | 9 |
| Shovel or backhoe | 2 |
| Hand tool, portable power tool, or machine | 5 |
| Saw chain | 129 |
| Elevation, n.e.c.* | 1 |
| Drilling, boring turning machine, n.e.c.* | 1 |
| Machine, n.e.c.*, linotype | 6 |
| Cable, chain, rope | 12 |
| Trees or Limbs | 62 |
| Truck | 18 |
| Furniture | 8 |
| Lumber and timbers | 76 |
| Pole or post | 2 |
| Saw | 1 |
| Saw, circular | 2 |
| Hoisting apparatus, n.e.c.* | 3 |
| Belt conveyers | 1 |
| Conveyers, n.e.c.*, overhead trolley | 1 |
| Saw, table or jump | 1 |
| Metal object, fabricated, n.e.c.* | 2 |
| Nail, spike or track | 2 |
| Splinter, wood | 2 |
| Flying particle--wind blown | 1 |
| Splinter, metal | 1 |
| Pick or pick axe | 1 |
| Wire not electrically charged | 2 |
| Drill | 1 |
| Hook, n.e.c.* | 2 |
| Bales, boxes, containers--full or empty | 3 |
| Brick building, block, etc | 6 |
| Metal stock | 2 |
| Paper loose, paper in cases, rolls, etc | 4 |

TABLE VIII-22 (CONTINUED)

FLORIDA LOGGING INJURIES BY AGENCY, 1974
JANUARY-SEPTEMBER

| Agent | No. of Injuries |
|------------------------------------|-----------------|
| Glass, n.e.c.* | 1 |
| Tire of wheel | 5 |
| Pliers | 1 |
| Wrench | 2 |
| Drag line, crawler, crane | 1 |
| Pipe | 1 |
| Axe | 4 |
| Hammer | 1 |
| Sledge | 1 |
| Tracked vehicle or dozer | 1 |
| Chain hoist or chain blocks | 1 |
| Floors | 3 |
| Ground | 15 |
| Ramps, runways | 1 |
| Sidewalk | 1 |
| Working surface, n.e.c.* | 10 |
| Hand truck or dolly | 1 |
| Hose and pipes | 1 |
| Stairs or steps | 1 |
| Skid, pallet, flat | 1 |
| Bodily motion, n.e.c.* | 10 |
| Temperature/pressure abnormal | 3 |
| Gasoline | 1 |
| Fire, flame | 2 |
| Acids, n.e.c.* | 1 |
| Chemicals and poisons, n.e.c.* | 1 |
| Poisons, wood or vegetation | 3 |
| Poison, infectious agents, n.e.c.* | 1 |
| Infrared, ultraviolet | 1 |
| Locomotive | 1 |
| Grader or scraper | 1 |
| Miscellaneous | 38 |
| Total | <u>485</u> |

* not elsewhere classified

Derived from reference 17

