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Work-related Musculoskeletal Disorders in Workers of Poultry Processing Industry

Occupational diseases of the musculoskeletal system of workers engaged in processing poultry were characterized. It is noted that the main harmful risk factors that cause musculoskeletal disorders workers are repetitiveness operations at a rapid pace, vibration, forceful exertion, awkward and static postures, cold temperatures. Technical and organizational measures to prevent the development of workers muscular-skeletal disorders was suggested.

Poultry processing industry, musculoskeletal disorders, risk factors, workers

In the mid-1980s, the poultry processing industry began to focus on the problem of work-related musculoskeletal disorders (MSDs). Musculoskeletal disorders include injury to the nerves, tendons, muscles and supporting structures of the hands, wrists, elbows, shoulders, neck and low back [1].

MSDs continue to be common among workers in the poultry processing industry. In fact, the incidence rate of occupational illness cases reported in this industry in 2011 and 2012 has remained high at more than five times the average for all industries. The rate in poultry plants of one musculoskeletal disorder, carpal tunnel syndrome, was more

than three times the national average in 2012 and seven times the national average in 2011. Poultry industry employers were also more than three times in 2012 and almost six times in 2011 more likely to identify repetitive motion as the exposure resulting in a serious injury compared to employers in all industries [2].

Many poultry processing jobs are physically demanding and involve factors that increase the risk of developing work-related musculoskeletal disorders. These factors include repetition, force, awkward and static postures, and vibration. In addition, many operations in poultry processing occur with a chilled product or in a cold environment. Cold

temperatures in combination with these ergonomic risk factors increase the potential for musculoskeletal disorders to develop.

Studies published in the scientific literature and research reports also confirm experiences documented in the poultry industry. A recent study of poultry plant workers reported that the prevalence of carpal tunnel syndrome was 2.5 times higher in poultry workers than in non-poultry manual laborers. The authors found that poultry workers who performed tasks requiring the most repetitive hand manipulation (cutting, eviscerating, washing, trimming, deboning, and multiple tasks) had a higher rate of carpal tunnel syndrome than those performing other tasks along the production line (packing, sanitation, chilling, and others) [3].

Similarly, at another poultry plant, scientists reported a higher incidence of musculoskeletal disorders, particularly in the deboning department which had the highest worker exposure to repetitive and forceful hand-wrist motion. Employers should consider an musculoskeletal disorders to be work-related if an event or exposure in the work environment either caused or contributed to the MSD, or significantly aggravated a pre-existing musculoskeletal disorders. Poultry processing companies that have already instituted processes that reduce risk factors for musculoskeletal disorders have found that these changes resulted in savings by lowering injury and illness rates, reducing workers' compensation costs, and improving efficiency [4].

A Process for Protecting Workers

While poultry processing facilities vary, an effective process to prevent musculoskeletal disorders among poultry plant workers generally includes all the critical elements listed below (management support, employee involvement, effective training, periodic review of injury and illness

reports to help identify problems, encouraging and utilizing early reports of injuries, implementing effective solutions, and evaluating progress) and can be tailored to an individual processing facility's operations. Employers develop a process to systematically address ergonomics-related risk factors in their work environments and incorporate them into their existing safety and health programs.

Involve Workers

An effective ergonomics process also includes active employee involvement. Involving workers improves problem-solving and hazard identification capabilities for the ergonomics process. Involving employees in the ergonomics process also leads to greater acceptance when workplace modifications are proposed and implemented. The following are some ways to involve workers in the ergonomics process:

- Regularly communicate with employees about effective workplace practices and provide employees with information relevant to the ergonomic process;
- Implement a procedure that encourages early reporting of symptoms of MSDs without fear of reprisal;
- Develop a system to engage employees in the design of work, equipment and procedures, the reporting of workplace hazards, and training;
- Establish an employee complaint or suggestion procedure designed to allow employees to raise ergonomic issues without fear of reprisal;
- Request employee feedback on workplace modifications;
- Form employee groups to help identify problems, analyze tasks and recommend solutions.

All Employees Training

All employees receive general awareness training on ergonomic issues. This training can be integrated into initial safety and health training. When training is effective the workers will: learn the proper use of equipment, tools, and machine controls; recognize early symptoms of MSDs and the importance of early reporting; learn the procedures for reporting work-related injuries and illnesses; learn how to identify ergonomic risk factors; learn the process for reporting ergonomic concerns and providing feedback to the employer. Poultry processing employees – including all production workers, supervisors and managers, engineers and maintenance personnel, as well as health-care providers – receive job-specific training on preventing MSDs.

Identify Problems

To identify existing problems, employers should regularly review all reports of injury and illness. This includes reviewing first-aid logs, nurse's logs, reports of workers' compensation claims, insurance company reports and employee reports of problems. All such reports should be reviewed regularly and more frequently if there are any process or staffing changes. This regular monitoring should be conducted to determine if interventions are necessary to assure that no new problems are created. As stated earlier, workers must be trained on the early signs and symptoms of musculoskeletal disorders and encouraged to report all symptoms early. The survey is one method for identifying areas or jobs where potential problems exist and indicate the need for further investigation of that job.

Identify Risk Factors

A more effective approach, in combination with reviewing injury and illness records, is to be proactive and identify potential ergonomics





ic issues that may have gone unnoticed or have resulted from facility changes, before they result in MSDs.

Ergonomics-related risk factors that may lead to the development of MSDs in poultry processing facilities include:

- *Repetition* – performing the same motion or series of motions continually or frequently. The number of repetitious movements may be affected by the speed of a conveyer belt, or the number of workers available to do the job (crewing standards).
- *Forceful exertion* – the amount of physical effort to perform a demanding task (such as heavy lifting, hanging / re-hanging birds, pulling skin) or to maintain control of equipment or tools.
- *Awkward and static postures* – assuming positions that place stress on the body, such as reaching above shoulder height, kneeling, squatting, leaning over a worktable, twisting the torso while lifting, maintaining a sustained posture for a long period of time, as well as holding or using tools (e.g., knives or scissors) in a non-neutral or fixed position.
- *Vibration* – using vibrating hand-held power tools can increase the stress on the hands and arms. This is especially a problem if other risk factors are present in the task.
- *Cold temperatures* in combination with the above risk factors may also increase the potential for MSDs to develop. Many of the operations in poultry processing occur with a chilled product or in a cold environment.

Employers should look for these factors when screening and analyzing jobs, operations, or workstations to determine which risk factors are present. Jobs and tasks that have multiple risk factors have a higher probability of causing MSDs.

Employers implement a process that addresses the following areas:

- *Accurate injury and illness recordkeeping.* Complete, descriptive, and accurate injury and illness records can be used to identify problem areas and evaluate progress. Early reports provide a mechanism to track MSD injuries plant-wide and evaluate the effectiveness of work changes.
- *Early recognition and reporting.* Early reporting of symptoms of MSDs reduces injury severity, the likelihood of permanent disability, and the number and costs of workers' compensation claims. It also identifies possible risk areas in the plant for intervention.
- *Systematic evaluation and referral.* A defined process or protocol for evaluating employee reports, providing conservative treatment and work restrictions, and referring employees for medical attention provides an effective and consistent approach for minimizing the severity of MSDs.
- *Conservative treatment.* If provided early in the development of an MSD, conservative treatment may eliminate the need for more invasive medical procedures. Conservative treatment may include rest, hot or cold therapy, nonsteroidal anti-inflammatory agents, exercise, or night splints, depending on the nature and severity of the problem.
- *Conservative return-to-work.* Modified or restricted work, job accommodations or light duty for a worker with an MSD, can allow the worker to continue to perform productive work for the employer while continuing to allow recovery from injury.
- *Systematic monitoring of employees' health.* Monitoring employee health will help to prevent MSDs. Employers should consider instituting a medical surveillance program for musculoskeletal disorders to monitor employee health and determine



the effectiveness of exposure prevention and medical management strategies. The following source provides information on medical monitoring and surveillance.

Implement Solution

Poultry processors may need to modify work-stations, purchase equipment, or change work practices to achieve their ergonomic goals. Simple, low-cost solutions are often available to solve problems. Employers should consider ergonomic issues when designing new plants or redesigning existing plants, when major changes are easier to implement, and ergonomic design elements can be incorporated at little or no additional cost.

Employers should consider seeking the consultation of an occupational health professional trained in ergonomics for assistance in one or more components of this process if and when company initiatives do not adequately address an issue. Many poultry processors have successfully implemented engineering ergonomic solutions in their facilities as a way to address their workers' MSD injury risks. ■

Охарактеризовано професійні захворювання опорно-рухового апарату працівників, зайнятих переробкою птиці. Відмічено, що основними шкідливими факторами ризику, що викликають м'язово-скелетні розлади працівників є повторюваність операцій у швидкому темпі, вібрація, надмірне фізичне напруження, статична робоча поза, низька температура. Запропоновані технічні та організаційні заходи щодо запобігання розвитку у працівників м'язово-скелетних розладів.

Птахопереробна індустрія (галузь), робітники, м'язово-скелетні розлади, фактори ризику

Охарактеризованы профессиональные заболевания опорно-двигательного аппарата работников, занятых переработкой птицы. Отмечено, что основными вредными факторами риска, вызывающих мышечно-скелетные расстройства работников является повторяемость операций в быстром темпе, вибрация, чрезмерное физическое напряжение, статическая рабочая поза, низкая температура. Предложены технические и организационные меры по предотвращению развития у работников мышечно-скелетных расстройств.

Птицеперерабатывающая индустрия (отрасль), работники, мышечно-скелетные расстройства, факторы риска

References

1. Musculoskeletal Disorders and Workplace Factors: A Critical Review of Epidemiologic Evidence for Work-Related Musculoskeletal Disorders of the Neck, Upper Extremity, and Low Back [Електронний ресурс] / Bruce P. Bernard. – U.S. Public Health Service, National Institute for Occupational Safety and Health, DHHS. – 1997. – Режим доступу: <http://www.cdc.gov/niosh/docs/97-141/pdfs/97-141.pdf>
2. Prevention of Musculoskeletal Injuries in Poultry Processing [Електронний ресурс]: Occupational Safety and Health Administration U.S. Department of Labor. – OSHA 3213-12R 2013. – 2013. – 32 p. – Режим доступу: <https://www.osha.gov/Publications/OSHA3213.pdf>
2. The prevalence of carpal tunnel syndrome in Latino poultry-processing workers and other Latino manual workers / [Cartwright M.S., Walker F.O., Blocker J.N. and al.] // J. Occup Environ Med. – 2012. – Vol. 54(2). – P.198-201.
3. Musolin K. Musculoskeletal Disorders and Traumatic Injuries Among Employees at a Poultry Processing Plant [Електронний ресурс] / K. Musolin, J.G. Ramsey, J.T. Wassell, C. Mueller. – Interim Report NHE. – 2013. – №2012 - 0125. – 35 p. – Режим доступу: http://www.cdc.gov/niosh/hhe/pdfs/2012-0125_interim_report_final.pdf