

## **Case Study**

### **Handling Large Fish Crates at Fish Markets**

#### **Background:**

Fish industries around the world are characterised by a large amount of manual work and handling of product and ice. One of the most common tasks is moving and storing large fish crates which are found in all parts of the supply chain including fishing cooperatives, auction centres, transport companies, fish processors, wholesalers and retailers. In NSW, the seafood industry provides more than 400 different species which are carefully sorted and put through different processing and handling methods, depending on the species, its size and market destination (Weigall and Simpson, 2002). One of the critical aspects of the job is to maintain the quality of the product.

Workers in these areas often complain of musculoskeletal aches and pains and injury figures for the wrist and low back are high. In a review of work processes, the following information was found in relation to fish crates:

- Fish crates were commonly stacked 5-6 high and sometimes 7 or more.  
At 6 high, most workers were lifting above chest height. The upper arms were raised and abducted with neck extended, workers were not balanced, standing on toes, or edge of lower crates to reach top crate.
- Fish crates weigh 20-50kg
- Fish crate made of plastic, with drain holes, made to stack together
- Fish crate dimensions (mm) L: 711, W: 438, H: 316
- Task is repetitive

- Hand trucks were used to move stacks of crates (4 at a time); using the trolley was awkward and excessive force required to overcome initial inertia of load to lift up and difficult to control to place crates down
- Crates were 'thrown' on auction floor to sort into species leading to twisting and flexing the back and neck. Loads 16-20kg or more; movements fast – for instance 7 crates in 30 seconds
- Crates are reorientated to show label when sorted on floor – workers twist to swivel crate



Photo 1: Using hand trolley to move fish crates

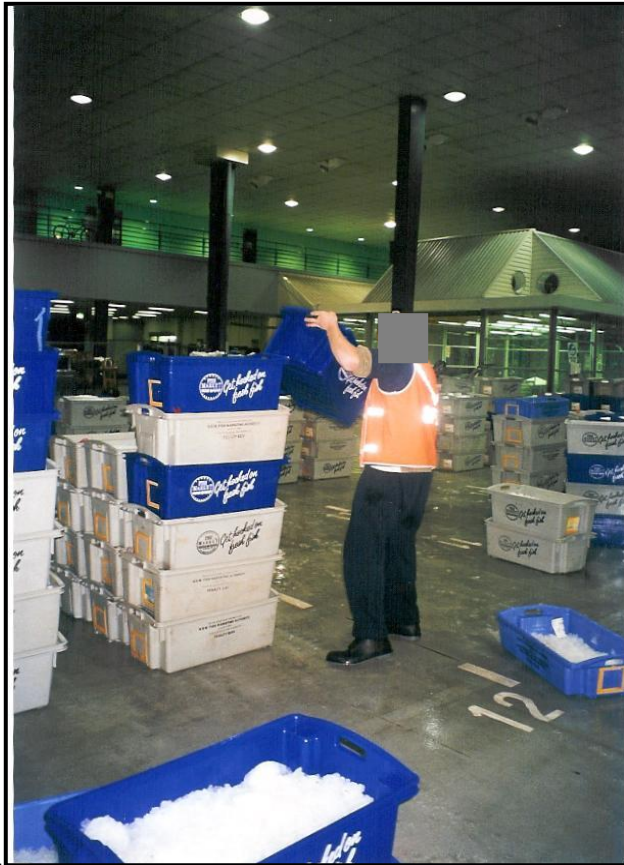


Photo 2: Stacking Crates

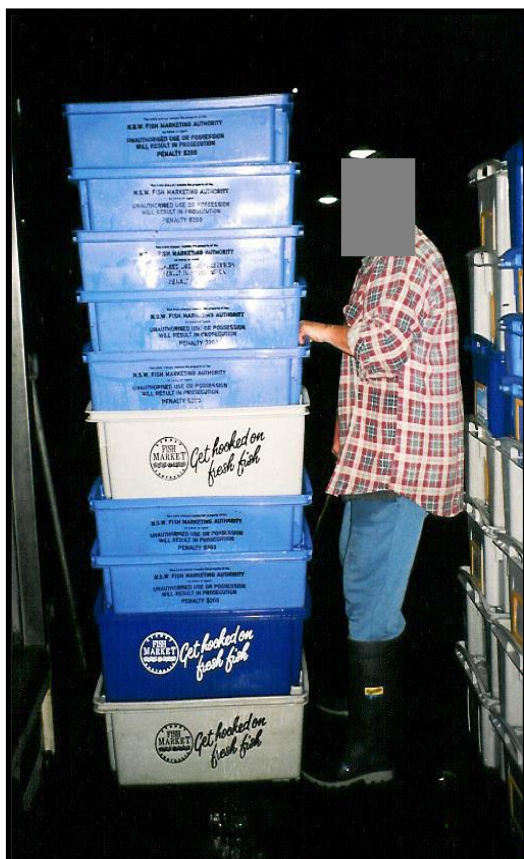


Photo 3: High Stack of Crates

## Questions

1. Using this description, identify the key ergonomic hazards, and list any others you may suspect could be an issue
2. Determine which ergonomic assessment strategies/tools/measurements you would use to determine the risks, and justify your choice
3. Make recommendations to improve the ergonomics of this work process

## **Model Recommendations**

The proposed solutions to include:

1. Undertake detailed process analysis to determine movement of product throughout system
2. Undertake consultation with Management and Workers
3. Measure musculoskeletal load – survey and quantify (choosing appropriate tools such as NIOSH, RULA, Manual Task Checklists, etc)
4. Outline controls for crates: redesign- size, weight, collapsible, etc; use of mechanical aids to move crates (forklifts, mechanised trolleys, conveyors, etc)
5. Discussion of trolley characteristics: curved handles, 'pram' handles, diameter of handle to suit population, wheel diameter, tyre characteristics, etc.
6. Streamline product flow
7. Limit stack height
8. Label crates on all sides so no swivel required
9. Develop overall strategy to manage this issues: Safety Management Systems, design requirements for workplace layout, consistency of materials and manual tasks management across industry, training and education for all staff
10. Other recommendations from participants.