

Occupational Health in Seafood Processing: Risks and Resources

SafetyNet

A Community Research Alliance on
Health & Safety in Marine & Coastal Work



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ATLANTIC NETWORKS FOR PREVENTION RESEARCH
ANPR

This presentation synthesizes slides and material from presentations by George Fox (Carbonear meeting), Kim Dunphy, Brenda Greenslade, Barbara Neis, Linda Sagmeister, Shirley Solberg and Ugis Bickis to the Finding Solutions Workshop, Battle Harbour Labrador, July 2006.

Health Risks Associated with Shellfish Processing

Shellfish processing is associated with many health risks including:

- Work-related Musculoskeletal Disorders (WMSDs)
- Occupational Asthma and Allergy (OAA)
- Envenomation
- Slips and Falls
- Dermatitis
- Ammonia leaks and cleaning chemicals
- Cold exposure

This presentation will focus on two major health risks:

- ❑ Work-related Musculoskeletal Disorders (WMSDs)
- ❑ Work-related Respiratory Problems (Occupational asthma and allergy)

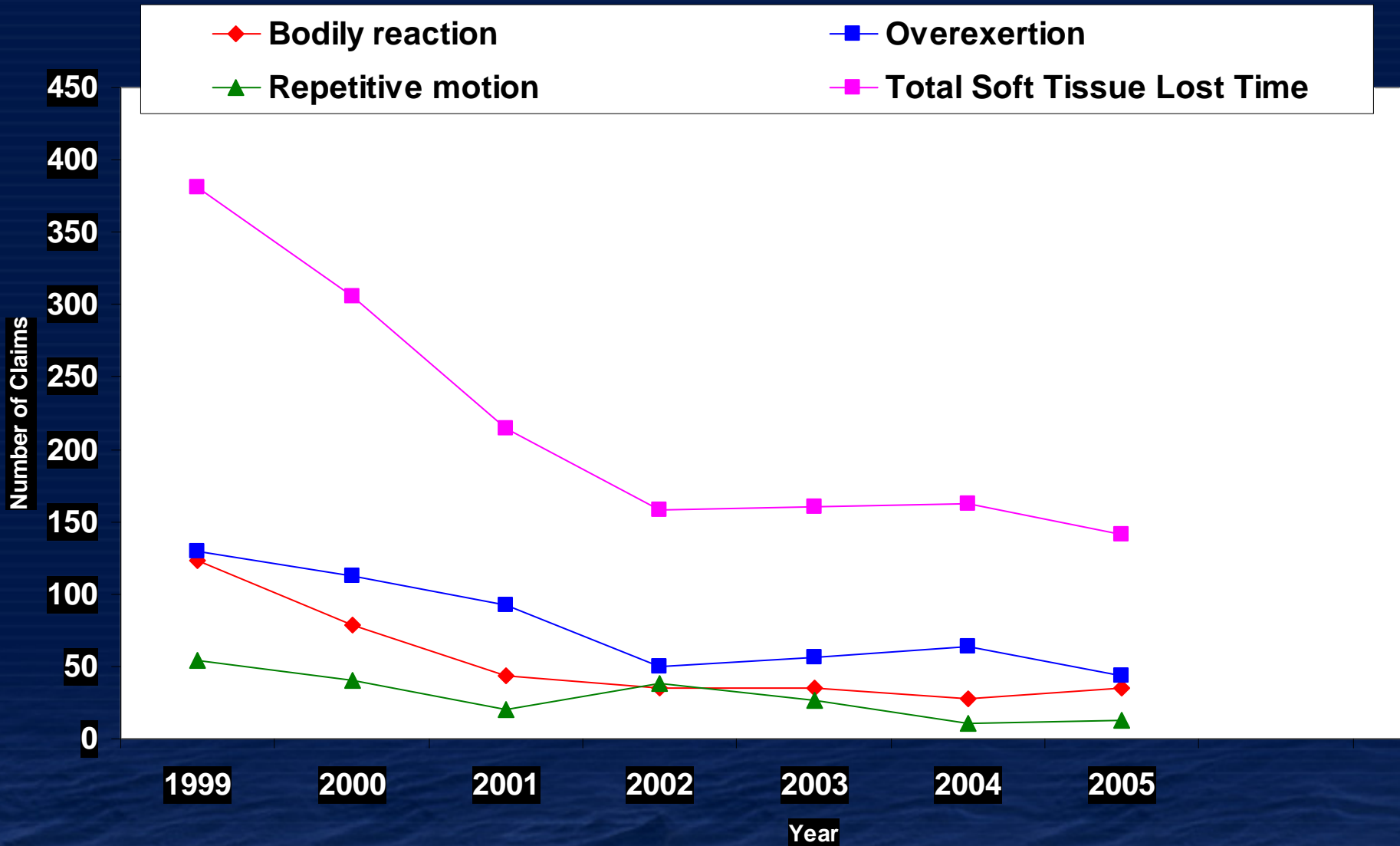
Work-Related Musculoskeletal Disorders (WMSDs)

- Also called Musculo-skeletal Injuries (MSIs) and Soft Tissue Injuries (STIs)
- Include Repetitive Strain Injuries (RSIs) and Cumulative Trauma Disorders (CTDs)
- Injuries to soft tissue like muscles, nerves, tendons and ligaments anywhere in the body
- Can be caused gradually through awkward posture, repetitive motions, carrying, bending, twisting, working in hot or cold environments, and poorly designed workstation or tools
- Can also be caused by slips, trips, or falls

- About half of all WHSCC claims in fish processing between 1999 and 2005 were for Soft Tissue Injuries
- Symptoms range from aches, pains and numbness to swelling, muscle weakness and fatigue
- Include problems like carpal tunnel syndrome, bursitis, tendonitis
- Can often be easily prevented by simple measures such as stretching, job rotation, risk assessments, etc

WHSCC Claims for Soft Tissue Injuries

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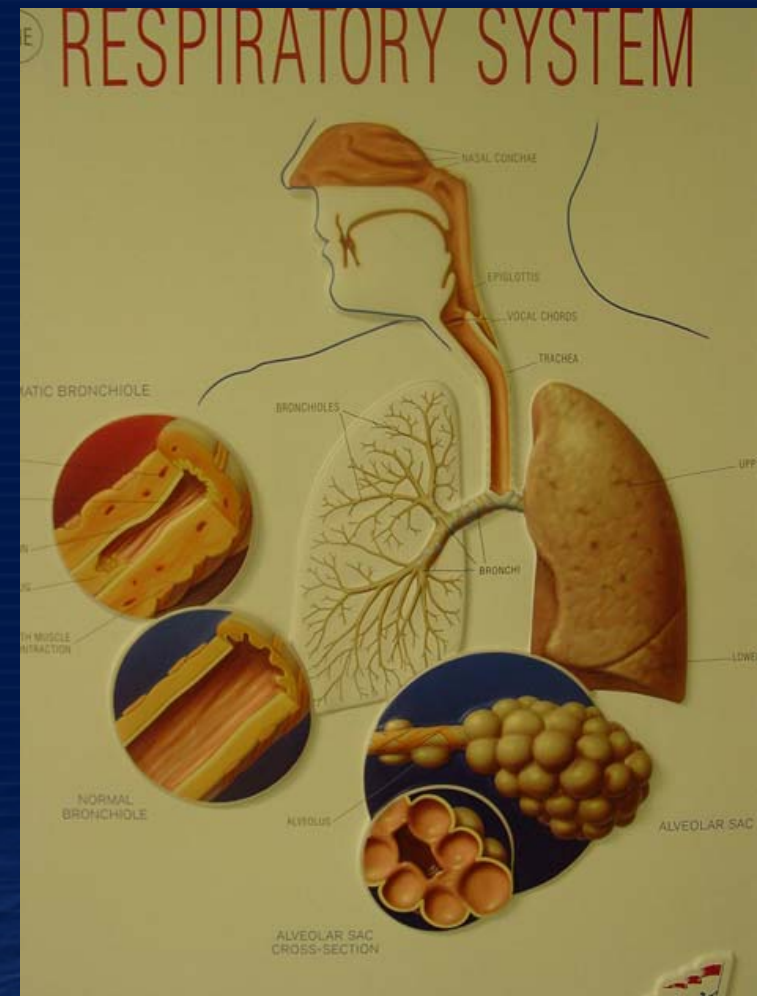


- In a recent single-plant study, 89% of surveyed female plant workers and 82% of male workers had symptoms of WMSDs
- Close to half of these workers reported symptoms continued beyond the work season
- Most had gone to a local physician; a few had been referred to a specialist
- Many workers self-managed symptoms through pain medication

Work-related Respiratory Problems: Occupational Asthma and Allergy (OAA)

Occupational allergy and asthma (OAA)

- Asthma: health condition that causes air passages to become smaller leading to shortness of breath, wheezing, cough and chest tightness
- Occupational asthma is caused and/or aggravated in the workplace by fumes, allergens, dusts and chemicals
- Symptoms usually improve or disappear away from workplace





➤ Exposure to aerosolized proteins from crab and shrimp is a major cause of OAA in plant workers

➤ As shellfish is processed, proteins are released into the air and inhaled by workers who may then become sensitized to them



➤ In shellfish processing plants, there are also irritants such as sulphites, forklift fumes, and cleaners which can aggravate OAA



Research on OAA has shown:

- a high prevalence of OAA among Eastern Canadian snow crab processing workers (up to 15%)
- processing “cooked” crab seems to be associated with a higher level of allergens than “raw” crab
- many workers don’t know that OAA can lead to serious health problems and that it is a compensable illness
- many health professionals feel they need more skills and better access to medical equipment to diagnose “crab asthma”
- women are more likely to get sick than men because of differences in exposures to allergens at work

Other Issues:

- Shellfish processing communities often have limited access to occupational health & safety expertise or appropriate medical care
- OAA and WMSDs can be difficult to diagnose
- There is under-reporting of illness for many reasons including few alternative employment opportunities and fear of job loss
- Workforce is aging and many communities are in decline
- Employment insecure within shellfish processing industry

Resources for Dealing with Work-Related Risks

Tools

- Ergonomics
- Occupational Health Risk Management

Services

- Workplace Health, Safety and Compensation Commission (WHSCC)
- Dept. of Government Services (OHS)

Ergonomics

Means fitting the task and the environment to the person to prevent discomfort and possible injury

Ergonomics deals with:

- workstation design & layout: items should be in immediate reach, height of work surfaces should be appropriate for employee
- state of equipment: tools should be right size for employee and be appropriate for the task; equipment should be properly maintained



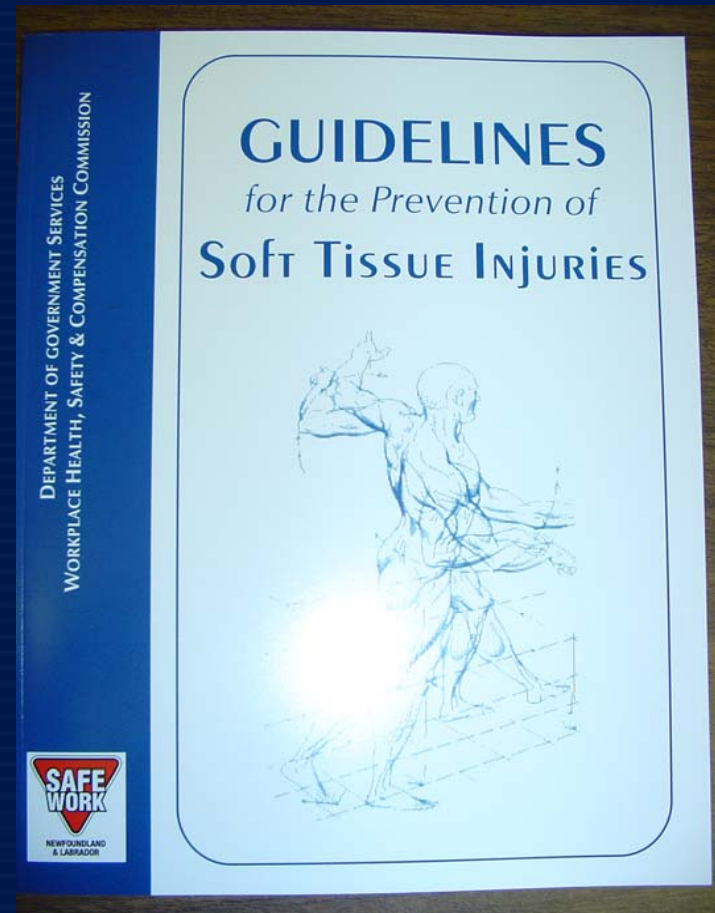
- **Organization of tasks:** length of shift, variety of tasks, seasonability of job and amount of recovery time between tasks affect ergonomics
- **Body mechanics:** employees should receive appropriate breaks, avoid awkward postures and use mechanical aids where possible



- Ergonomics can improve productivity, quality of work and health and safety conditions
- Employers are required by law to ensure employees work in an ergonomically safe workplace
- Ergonomics must be included in workplace inspections

It is important to:

- Prevent injury from occurring by looking for ergonomic risks
- Develop a system to report and address symptoms of injuries
- Report symptoms as early as possible



Department of Governments
Services and WHSCC can provide
this tool

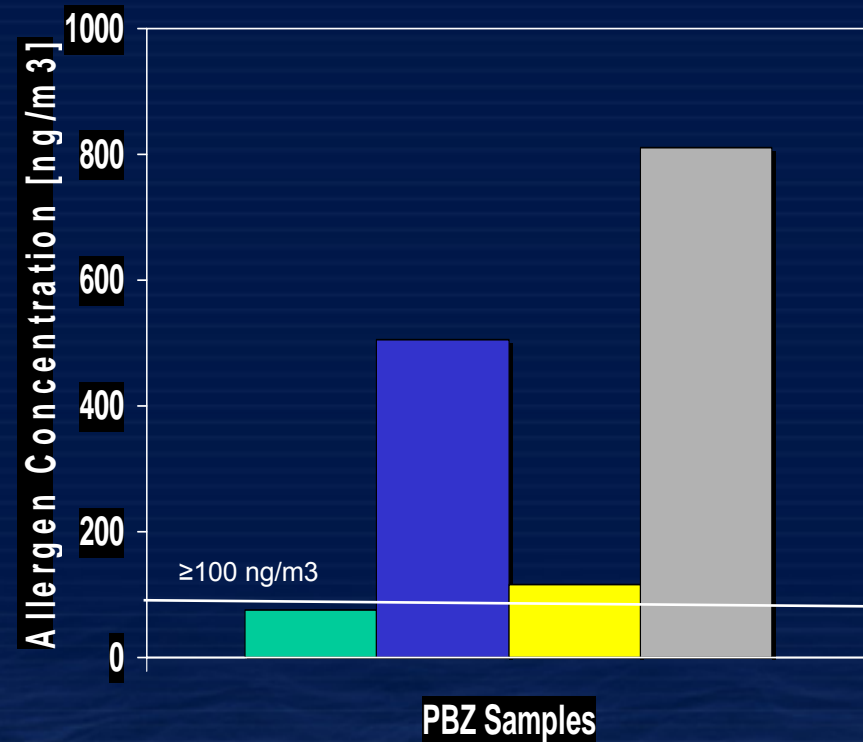
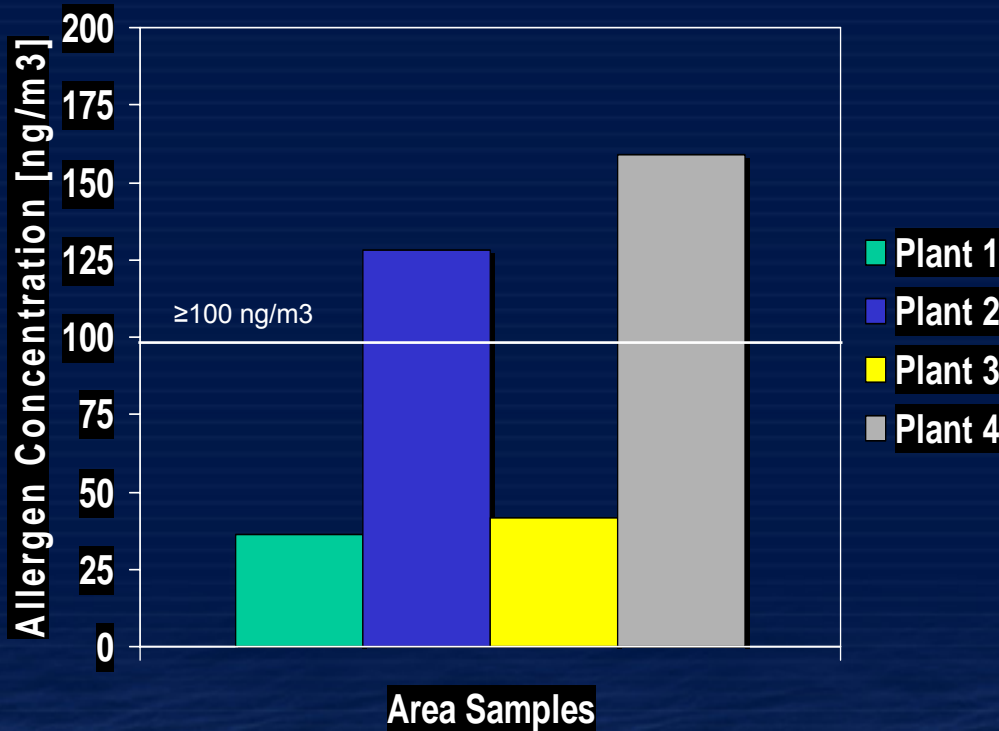
Industrial / Occupational
Hygiene: Reducing Exposures
(e.g. Allergens, Chemicals)

Identifying and reducing work-related exposures to airborne contaminants, such as dust, shellfish proteins, mists

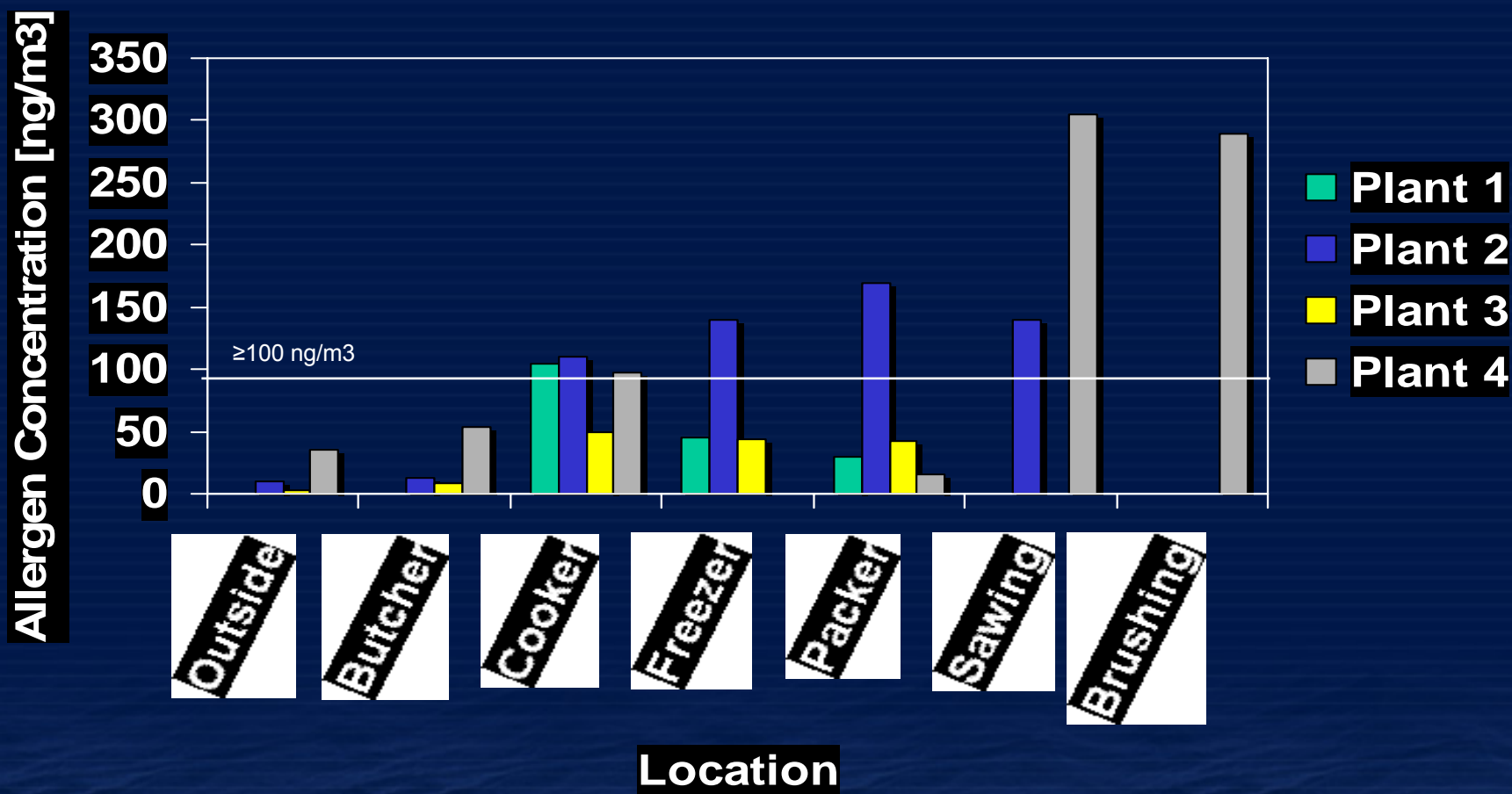
- Basic Principles: anticipate, recognize, control, communicate and evaluate
- Contaminants are managed at the source, along the path and at the receiver
- Proper ventilation is very important

Allergen levels vary between plants

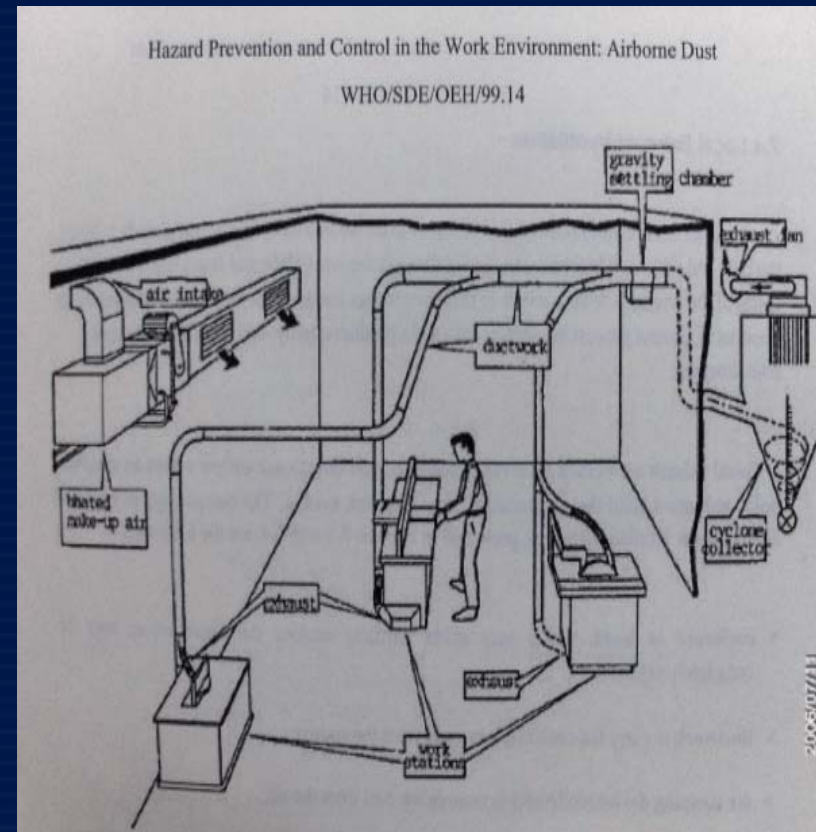
Average allergen concentration [ng/m³] in four NL plants:
“Area” and “Personal Breathing Zone” samples



Levels can be high in sawing, brushing, packing areas



- Minimize aerosolization of contaminants (allergens, etc.)
- Capture / collect contaminants that are in the air as close to source as possible
- Exhaust contaminants away from workers
- Avoid return of contaminants in make-up or replacement air
- Make-up air should be:
 - clean
 - directed to occupied zone
 - should move through zones of increasing contamination to exhaust



Maximize capture at source

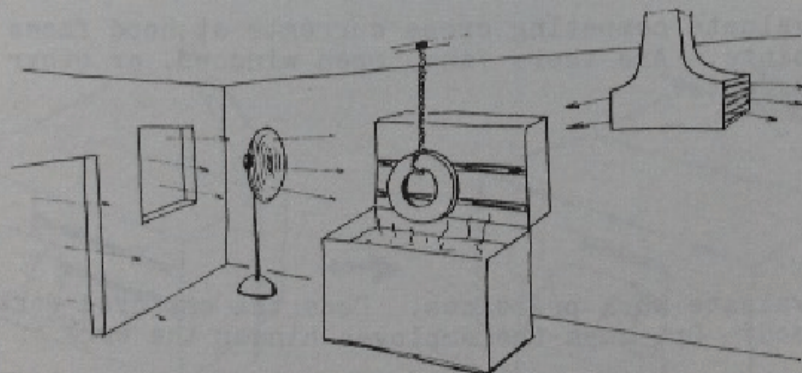
Watch out for things that can interfere with effective capture

TABLE 5-1 COMPETITORS TO CAPTURE VELOCITY

- o Cooling fans, free standing fans
- o Make-up and general room-air ventilation system outlets
- o Wind blowing through open windows and doors
- o People walking by (a person walks about 300 fpm)
- o Mobile equipment passing by
- o Obstructions in the path of capture which create eddying, turbulence

Cross-drafts:

FIGURE 5-8. COMPETITORS TO CAPTURE

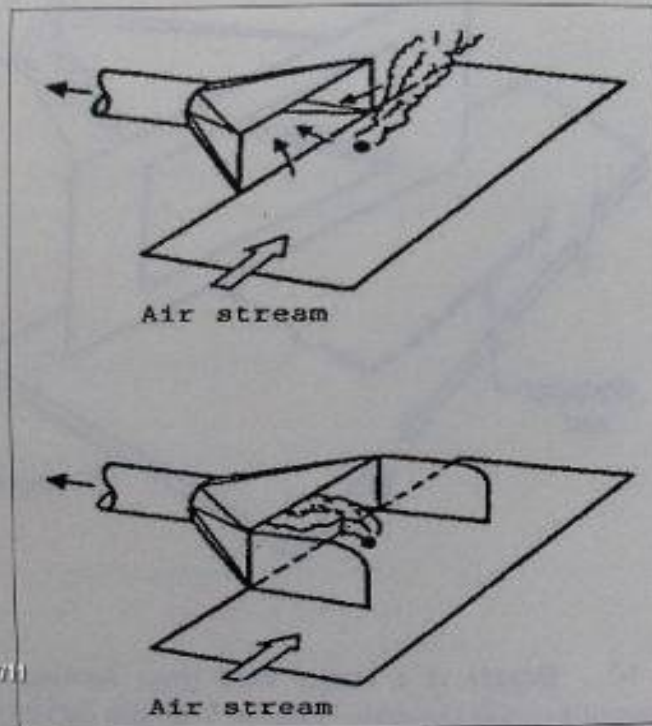


2006/07/11

Burton, NE 1990

Side baffles can improve efficiency

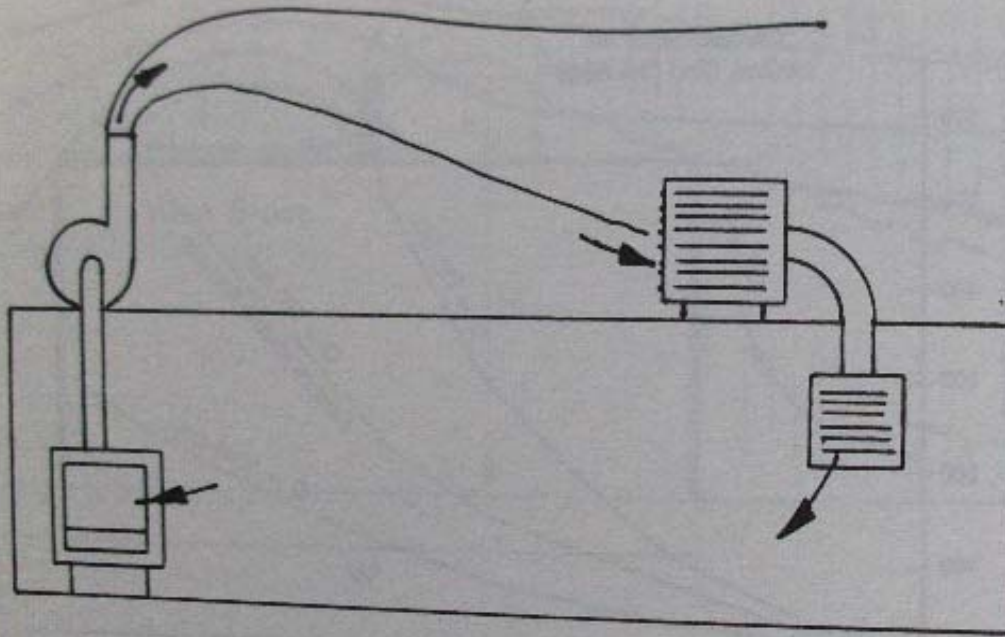
Side baffles can also greatly improve the capture efficiency of a simple hood (Figure 7-8).



2008/07/11

Get contaminants out and keep them out!

Figure 13-1. STACKS AND REENTRAINMENT



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Burton, IV, 1990

Workplace Health, Safety and
Compensation Commission
(WHSCC)

- Established in 1951
- Governed by board of directors appointed by provincial government
- Employer funded
- Administered by an independent party
- Provides mandatory coverage to 97% of NL's workforce

WHSCC provides three main services:

- conducting assessments
- managing claims
- encouraging injury & illness prevention

- All employers must register with WHSCC
- WHSCC collects revenue from employers in form of assessments
- Employers pay a premium based on certain criteria

WHSCC: Process of Managing Claims



- Injury or illness occurs
- Employee and employer submit claims
- Doctor submits medical documentation
- WHSCC reviews documents
- Adjudicator makes decision on compensation (benefits can include medical aid, temporary earnings loss, extended earnings loss, pension replacement benefits, survivors benefits, etc)
- Possible appeal
- Early & Safe Return to Work or Labour Market Re-Entry

- WHSCC promotes a culture of health & safety and primary prevention of illness and injury
- Encourages leadership within management, OHS committees and employees to work on OHS issues
- WHSCC is required by law to develop OHS standards, and approve and monitor certification training

Department of Government
Services

- Provide inspections to determine compliance with minimum health and safety standards
- Do spot checks
- Can give orders, stop work orders or prosecute if necessary
- Are not responsible for enacting safety measures or telling employers how to fix problems

- Role in SafetyNet project is to support research
- Still have a lot to learn about occupational health issues in shellfish processing
- Have a lot of resources available to employees and employers

- SafetyNet www.safetynet.mun.ca
- NL Lung Association www.nf.lung.ca
- Eastern Canada OHS www.shellfishohs.ca
- WHSCC www.whscc.nf.ca
- Government Services www.gs.gov.nl.ca
- American Conference of Governmental Industrial Hygienists: Ventilation Manual
www.acgih.org/store/ProductDetail.cfm?id=1668

- Canadian Registration Board of Occupational Hygienists
www.crboh.ca
- Association of Canadian Ergonomists
www.ace-ergocanada.ca
- Health Canada: Health Impact Assessment
www.hc-sc.gc.ca/ewh-semt/pubs/eval/handbook-guide/vol_3/index_e.html
- International Occupational Hygiene Association
www.ioha.net
- World Health Organization, OHS document
www.who.int/occupational_health/publications/en/oehairbornedust.pdf