

AIHA BC/Yukon 2016 Conference and Annual General Meeting

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Agenda

- The new risk analysis unit (RAU) – how it works
- Review some risks mitigation measures

Why a new Risk Analysis Unit?

- Fall of 2012 – Prevention Services had a review by Harvard regulatory specialist, Dr. Malcolm Sparrow
- This was a collaborative process with WorkSafeBC management/staff providing input
- A number of recommendations were made
- Gaps in “risk targeting” were identified

WorkSafeBC previously focused on “aligned risk” – tied to claims statistics (lagging indicators)

- Risk targeting required enhancement to include “non-aligned,” risk (incl. trends, leading indicators)

Role of the Risk Analysis unit

The role of the Risk Analysis Unit is to:

- Identify risks *before harm is done*
- To apply existing and new approaches to mitigating those risks

Scope of the RAU

The identification and mitigation of important non-aligned risks.

Six classes of non-aligned risks have been identified for action:

- 1 Serious and fatal injuries
 - 2 Slow-acting harms
 - 3 Catastrophic risks
 - 4 Invisible risks
 - 5 Conscious opponents
 - 6 Emerging risks
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Operating frameworks

- RAU operates on a 3-step process:
 - Risk identification
 - Assessment
 - Mitigation

Step One – Risk Identification

Internal Sources

- Risk Signals mailbox
– WorkSafeBC
officers and staff

External Sources

- Field specialists
- News agencies
- OHS Regulators
- OHS Professional
Institutions
- Other government
agencies
- NGO's

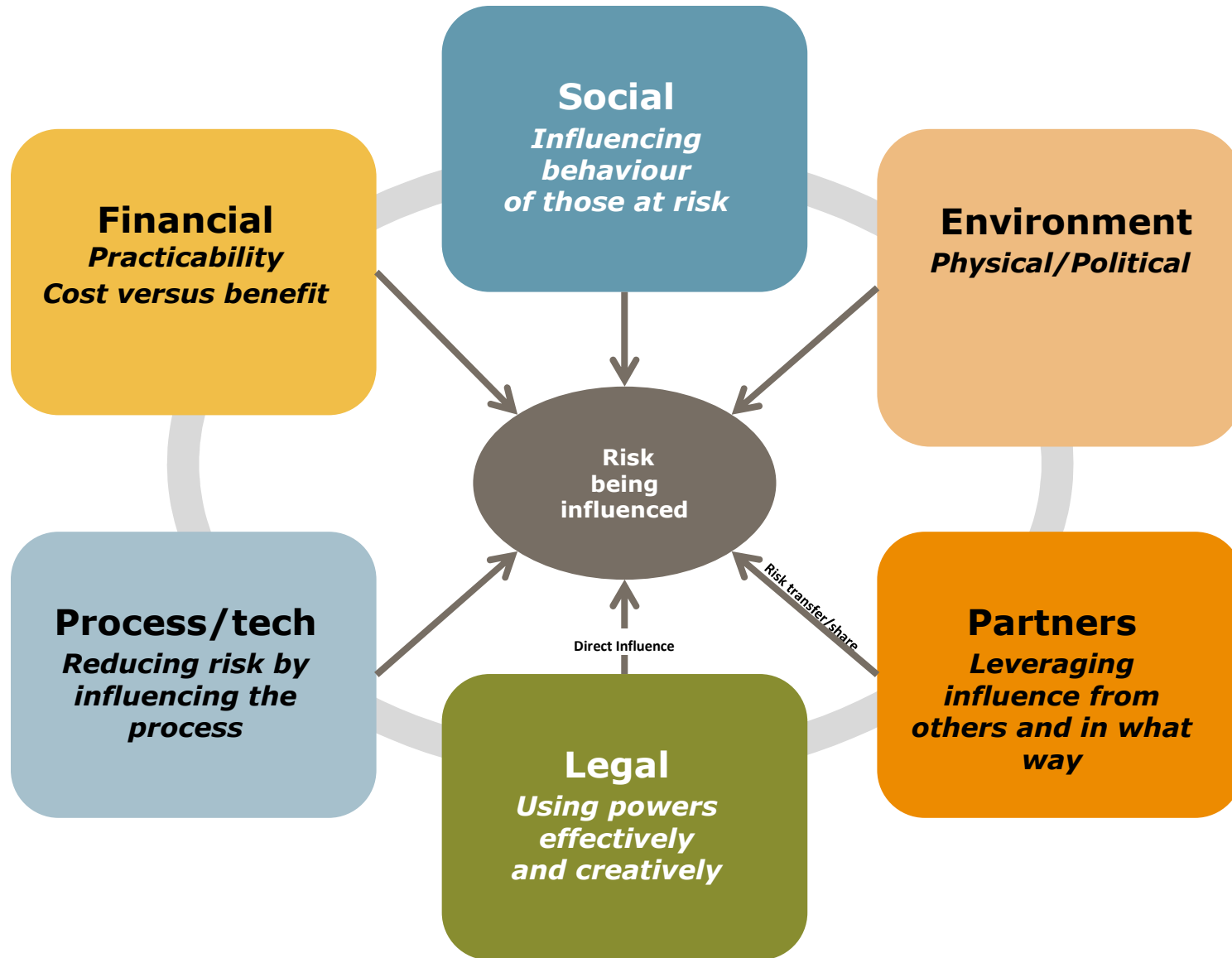
External Sources cont.

- 200+ feeds
- Websites
- Email alerts
- Industry publications
- Academic journals
- Subject matter
experts

Step Two – Risk Assessment

- Structured information gathering
- Includes risk categorization
- Uses semi-quantitative/progressive risk scoring methodologies
- Uses various OSH assessment models – bow tie
- Develop a profile of the targeted risk

Step 3: Mitigation Process



Synthesis gas generation in wood processing	Exposure to volatile organic compounds and toxic fumes from roofing materials	Risk of exposure to hazardous/toxic substances faced by workers at recycling facilities
Storage of flammable material in shipping containers	Spontaneous ignition fires in laundries	Risk of fire/explosion from pentane released from expandable polystyrene (EPS) foam blocks
Exposure to carbon dioxide in small craft brewing	Fire and explosion as a result of static electricity in paint manufacturing	Combustible dust outside primary wood processing
Exposure to chemical hazards in nail salons	Dust collector explosions and fire	First responder exposure to hazardous chemicals at legal marijuana grow operations in barns
Cl ₂ , ClO ₂ , SO ₂ exposure and management	Risk of exposure to hazardous chemicals in plastics processing	Diesel Particulate Filter (DPF) systems in close proximity to hydraulic components

Cross bore – directional drilling natural gas lines through underground utilities


- Risk - fire and explosion
- All Island and southern interior municipalities inspected.
- Risk communicated and employers required to implement safe work procedures for drain clearing



Gas line through high voltage conduit



Combustible Dust outside primary wood processing

- 200 classification units (CUs) reviewed for risk potential
 - Narrowed to 79
 - 323 locations inspected to provide BC perspective
 - Qualitatively risk-ranked list of 79 CUs created in quartile format
 - Classification units “ranked” into four groups – “quartiles”
 - Qualitative ranking between 1 – 4, with 1 posing the greater risk
 - “Best guess”! – not an exact science
 - 5 Safety bulletins created and posted on WSBC.com
 - Outreach/awareness materials for Industry being developed with Industry Safety Association (FIOSA-MIOSA)
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Combustible Dust Risk Quartiles

Quartile	CU	CU Description
1	712019	Lime kiln or lime manufacture
1	712004	Cement manufacture
1	714028	Wood chip mill
1	713001	Acid, base, salt, chemical, or dye manufacture (not elsewhere specified)
1	712024	Metal door, screen door, or aluminum framed window manufacture
1	714042	Woodworking or carpentry shop
1	712031	Powder coating or metal enamelling
1	713009	Explosives, fireworks, or munitions manufacture
1	713010	Fertilizer manufacture
1	713033	Synthetic resin compound manufacture
1	713011	Fibreglass or cultured marble product or acrylic household fixture manufacture
1	711003	Animal feed or supplement manufacture or packaging
1	711012	Food product manufacture (not elsewhere specified)
1	713024	Plastic or rubber recycling

Combustible Dust Risk Quartiles

Quartile	CU	CU Description
1	714035	Wooden moulding manufacture
1	712008	Die casting
1	712013	Foundry
1	713012	Fibreglass insulation manufacture
1	715034	Marine pleasure craft manufacture
2	714041	Wood framed window manufacture
2	713028	Plastic product manufacture (by profile extrusion)
2	714007	Flush door manufacture
2	711004	Baked goods manufacture
2	712016	Heavy equipment, machinery, or parts manufacture or installation (greater than 500 lb.)
2	714025	Stile and rail door manufacture
2	713007	Cosmetic product or beauty aid manufacture
2	714017	Pre-hung door assembly
2	713008	Drug, vitamin, or pharmaceutical manufacture
2	713029	Post-extrusion fabrication of plastic products
2	713034	Tire retreading or recapping
2	714013	Paper product manufacture (not elsewhere specified)
2	714014	Paper recycling or cellulose insulation manufacture
2	714034	Wooden furniture manufacture
2	714038	Wooden product manufacture (not elsewhere specified)
2	711006	Candy or chocolate manufacture
2	712034	Sheet metal fabrication
2	712039	Tool and die making
2	713025	Plastic product manufacture (by injection moulding, thermoforming, or other moulding processes) (not elsewhere specified)
2	713026	Plastic product manufacture (by blow moulding)
2	714008	Furniture refinishing or restoration
2	714009	Laminated wood structural support product manufacture
2	714036	Wooden toy or musical instrument manufacture
2	715032	Vinyl framed window manufacture

Combustible dust outside primary wood processing

- We identified the CUs where we believed the risk to be greatest and we went to some of the highest risk employers within those CUs.
- 162 employer locations inspected

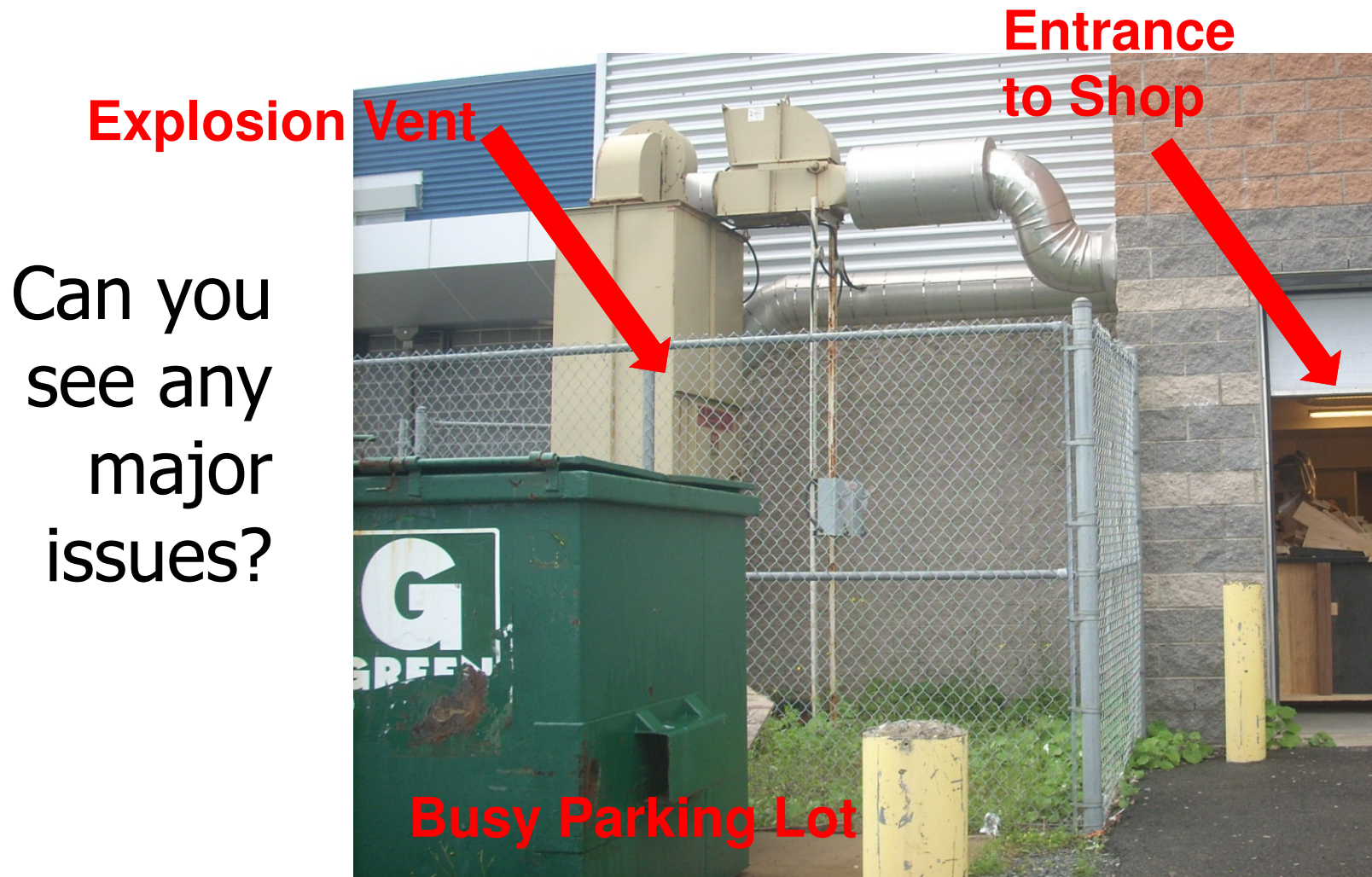
CU	Result
713009 - Explosives, Fireworks, or Munitions Mfg	Inspected 2 production facilities out of 3 (remaining one makes rope fuses)
713010 - Fertilizer Manufacture	Inspected <i>all</i> locations over \$1M; only 1 location remaining over \$500K.
713033 - Synthetic Resin Compound Manufacture	Inspected <i>all</i> locations over \$250K.
712008 - Die Casting or Non-Ferrous Foundry Operations	Inspected <i>all</i> locations over \$1M; only 1 location remaining over \$500K.
711004 - Baked Goods Manufacture	Inspected <i>all</i> 9 locations over \$1M
713008 - Drug, Vitamin, or Pharmaceutical Mfg	Inspected 7 of 18 locations over \$1M.
714014 - Paper Recycling, Cellulose Insulation Mfg	No remaining locations over \$500K.
713028 - Plastic Prod Mfg (by profile extrusion)	Inspected 3 of 5 locations over \$500K.

Dust collectors

- Widespread use in industry
- Various “designs”
- Located inside and out
- Risk of fire and explosion
- Widespread non-compliance with established standards
- Recirculation without prior approval
- Section 5.70 (table) and section. 5.71 to be opened up by PRRD in 2016



Explosion Prevention



Dust Collector 7,000 CFM

Can you see any major issues?

Explosion Vent



Main Exit

Craft Brewing



CONFINED SPACES



**CARBON DIOXIDE
EXPOSURE**

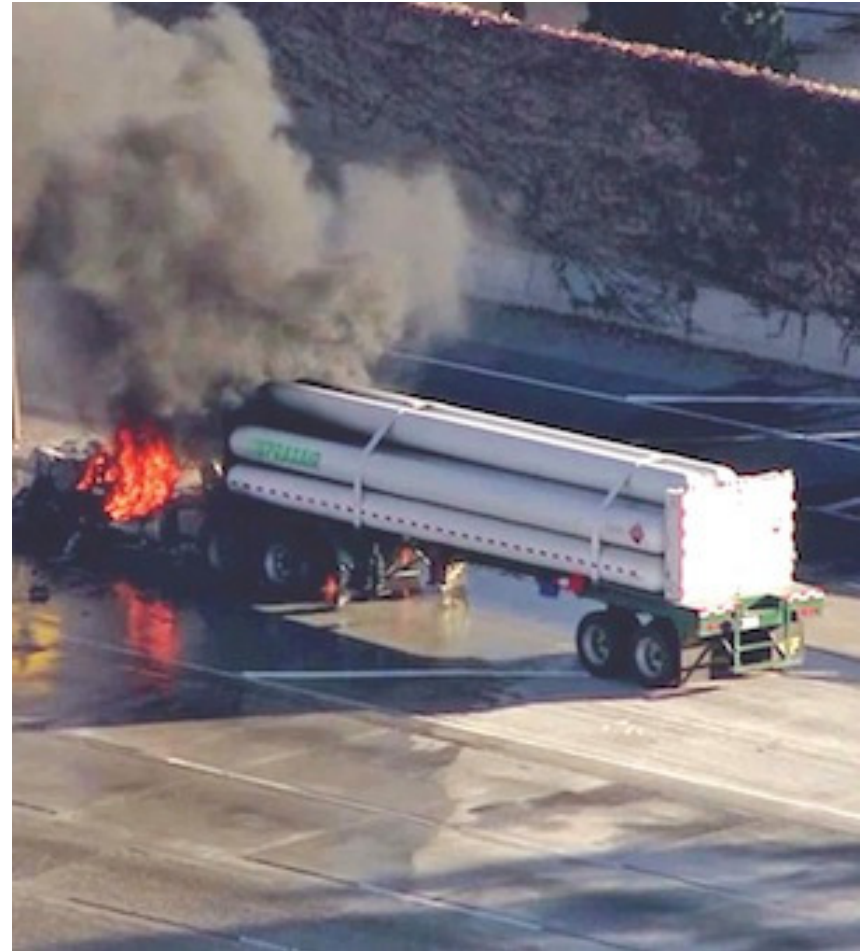
Synthesis Gas

- Generates as a result of (unintentional) gasification of organics
- Observed in the wood pellet/fiber sector
- Hydrogen, CO driven off
- Emerging energy process – when controlled
- WorkSafe Magazine article this week



Diesel Particulate Filter

- Notified via local incident
- PM10/2.5 filtration devices retrofitted to diesel vehicles
- Heat generated can melt hydraulic lines – flamethrower effect
- Communication to Prevention services about this risk to be issued
- Connecting with Transport Canada (with CVSE) on this issue to consider changes in the installations standards DPF and/or hydraulics
- Awareness materials to populations at risk, being developed utilizing input from Engineering.
- CVSE has agreed to distribute materials




Anhydrous Ammonia

- Risk associated with a emergency release where quantities are stored and used.
 - Applications including refrigeration, combustion emission control, supplier/chemical producer
- Findings:
 - Detection in the case of pressure release device activating or malfunction often lacking
 - Monthly bump testing of fixed monitors often not happening
 - Refrigeration sites often assuming that third-parties will be able to bring release under control without verifying if third party is willing and capable to respond
 - Synergies with BCSEA

Chlorine

- Risk associated with a emergency release where quantities are stored and used.
 - Applications including pools, water treatment, wastewater treatment, and pulp and paper
- Findings:
 - With the exception of pools in a few municipalities, workplaces are switching away from gaseous chlorine
 - Chlorine releases mostly at pools.
 - In most instances, a shut-off connected to the alarm system or remote activated shut off would have immediately brought hazard under control (required by regulation)
 - None of small number of pools that were visited had the required shut-off, whereas non-pools had this shut-off.

Fire and explosion risk in paint manufacturing – static electricity

- Top 9 firms in two CUs (19 employers in CU) have been inspected:
 - Covers >84% of the CU payroll
 - Safety bulletin created for distribution to all employers in the CU
 - Guideline being developed to clarify grounding and/or bonding concept
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Exposure to Radiation from Dental Cone-beam Computed Tomography (CBCT)

- 60 employers were contacted by telephone in May to confirm usage and frequency
- This information provided estimation of the numbers using this technology as well as the types of exposures
- Results are being analyzed and preliminary report outlining potential next steps will be drafted.
- The results of the assessment will drive a mitigation plan. Options may include:
- Awareness of the risk to the industry through the BC Dentistry Association
- Push for the following within industry:
 - Approp. dosimetry usage
 - Approp. construction and installation standards
 - Approp. Safe work procedures

Exposure to 1-Bromopropane

- Risk - Officer referral
- Unclear whether this is used in Canada
- Manufactured in China and India
- Neuro-toxic substance used as an adhesive in manufacturing in the US
 - Not contained in 3M or Dow products
- Used as a substitute for PERC in the US
- Washing of electronic components
- Possibly used in aircraft manufacture and maintenance
- Pricey!



Hazardous Drugs

- Includes cytotoxic (Regulation), antineoplastic, and other hazardous drugs
- Workers exposed at every level of medication handling
 - Pharmacists, nurses, laundry and cleaning staff
- Changing uses of hazardous drugs introducing exposure to new occupations
 - Community pharmacies, home care, veterinary workers
- WorkSafeBC – publication of *Best Practices for the Safe Handling of Hazardous Drugs*
- WorkSafeBC partnership with CAREX Canada with the aim of providing exposure estimates by occupation

New Resources

Risk Advisories – available on WorkSafeBC.com

LinkedIn:

- WorkSafeBC page
- Gordon Harkness

And finally....there's more!!

Interested in making a difference?

- We would like to hear from you
- Join the WorkSafeBC prevention team
- OHO positions available throughout BC
- See Kathy Tull at the booth

