BTEC NYSERDA Pellet Storage Stakeholder Session # 2

10 AM ET, February 19, 2013

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Biomass Thermal Energy Council (BTEC) and the New York State Energy Research and Development Authority(NYSERDA)

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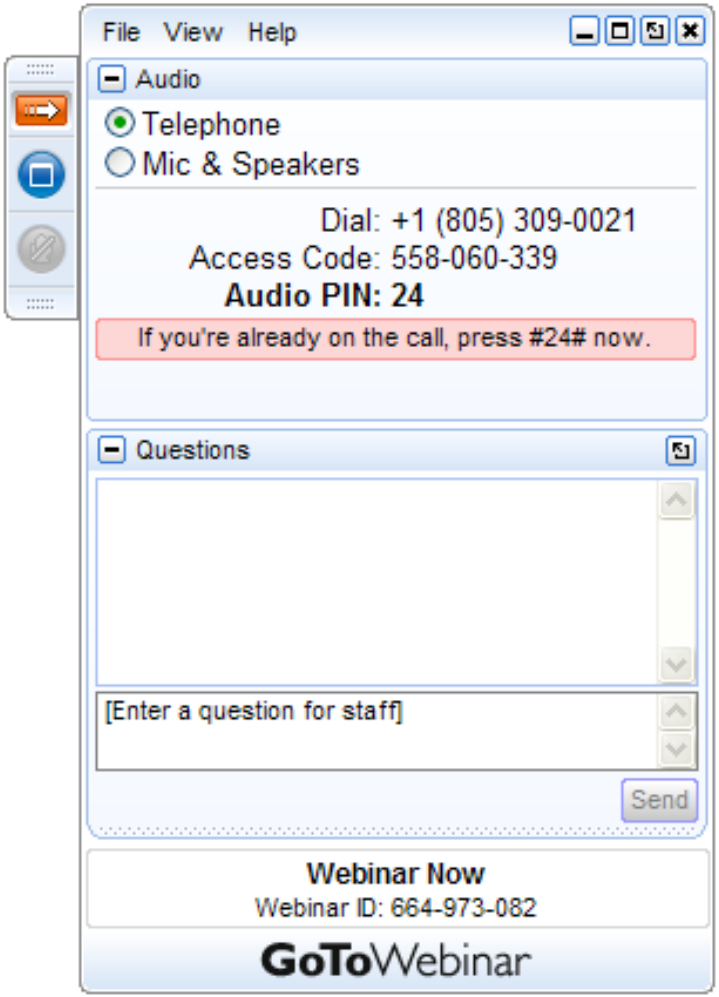


Speakers

- **Joseph Seymour,** Biomass Thermal Energy Council
- **Ray Albrecht,** Biomass Thermal Energy Council
- **Waltraud Emhofer,** Bioenergy 2020
- **Christian Rakos,** European Pellet Council
- **Tim Cullina,** Fauske & Associates

Presentation Outline

I. **Introduction to BTEC and project overview** – Joseph Seymour
II. **Update on project's major tasks** – Ray Albrecht
III. **Safe pellet project update** – Waltraud Emhofer
IV. **European overview and response**– Christian Rakos
V. **Confined storage and combustible dust standards** – Tim Cullina
VI. **Q&A** – Joseph Seymour

Joseph Seymour

- Executive Director, Biomass Thermal Energy Council
- **Introduction & Project Overview**

Introduction to BTEC

The Biomass Thermal Energy Council (BTEC) is the industry trade association dedicated to advancing the use of biomass for heat and other thermal energy applications.

Why was BTEC established?

1. To **advocate for and promote** the biomass thermal industry in the national energy policy debate
2. To **reach out** to and **educate** the public and decision makers on the benefits and advantages of using biomass for heat and CHP
3. To develop biomass energy **research and analysis** that enables sound investment and policy decisions
    1. Technical and Regulatory Affairs Committee (TRAC) created to help address safety and regulatory concerns, increase markets
    2. Member-led
    3. Will assist NYSERDA project when needed

Ray Albrecht

- Technical Consultant, Biomass Thermal Energy Council
- **BTEC Project Update**

NYSERDA Bulk Pellet Storage Project Tasks

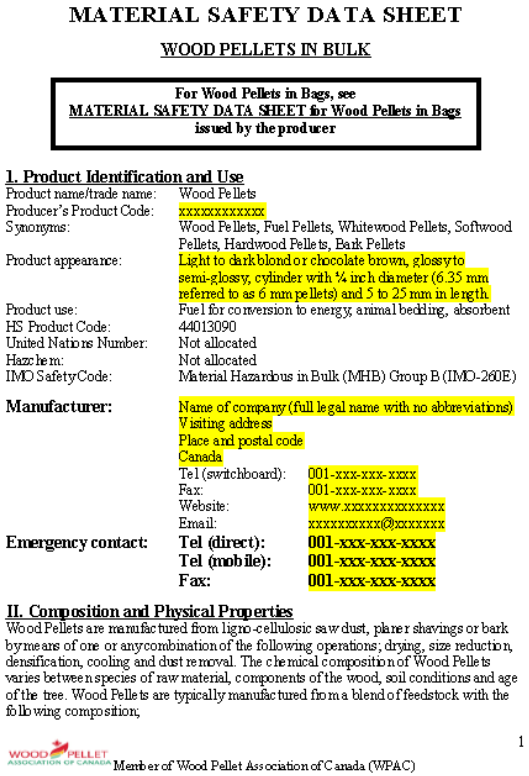
- Literature review relating to CO formation during bulk pellet delivery and storage
- Information gathering relating to policies and standards in Austria, Germany, Sweden and Canada
- Webinars for biomass thermal industry and government agencies
- Conference presentation and technical article

Literature Search

- Reports and articles published during past decade by:
  - Bioenergy 2020 in Austria
  - University of British Columbia in Canada
  - Wood Pellet Association of Canada
  - Science Partners in Sweden
  - University of Uppsala in Sweden
- Allowable CO human exposure limits, CO formation mechanisms during bulk pellet delivery and storage, ventilation and mitigation strategies
  - **Copies available upon request**

Information Gathering Relating to Policies and Standards

Austria, Germany, Sweden and Canada



MATERIAL SAFETY DATA SHEET

WOOD PELLETS IN BULK

For Wood Pellets in Bags, see
MATERIAL SAFETY DATA SHEET for Wood Pellets in Bags
issued by the producer

1. Product Identification and Use

Product name/trade name:	Wood Pellets
Producer's Product Code:	xxxxxxxxxxx
Synonyms:	Wood Pellets, Fuel Pellets, Whitewood Pellets, Softwood Pellets, Hardwood Pellets, Bark Pellets
Product appearance:	Light to dark blond or chocolate brown, glossy to semi-glossy, cylinder with ¼ inch diameter (6.35 mm referred to as 6 mm pellets) and 5 to 25 mm in length.
Product use:	Fuel for conversion to energy, animal bedding, absorbent
HS Product Code:	44013090
United Nations Number:	Not allocated
Hazchem:	Not allocated
IMO Safety Code:	Material Hazardous in Bulk (MHB) Group B (IMO-260E)

Manufacturer: Name of company (full legal name with no abbreviations)
Visiting address
Place and postal code
Canada
Tel (switchboard): 001-xxx-xxx-xxxx
Fax: 001-xxx-xxx-xxxx
Website: www.xxxxxxxxxxxxx
Email: xxxxxxxxx@xxxxxxx

Emergency contact:
Tel (direct): 001-xxx-xxx-xxxx
Tel (mobile): 001-xxx-xxx-xxxx
Fax: 001-xxx-xxx-xxxx

II. Composition and Physical Properties

Wood Pellets are manufactured from ligno-cellulosic saw dust, planer shavings or bark by means of one or any combination of the following operations; drying, size reduction, densification, cooling and dust removal. The chemical composition of Wood Pellets varies between species of raw material, components of the wood, soil conditions and age of the tree. Wood Pellets are typically manufactured from a blend of feedstock with the following composition;

1

WOOD PELLET ASSOCIATION OF CANADA Member of Wood Pellet Association of Canada (WPAC)

Model Bulk pellet MSDS from Canada

Could be adapted by pellet suppliers

Information Gathering Relating to Policies and Standards

Austria, Germany, Sweden and Canada

Austrian Standard

M 7137

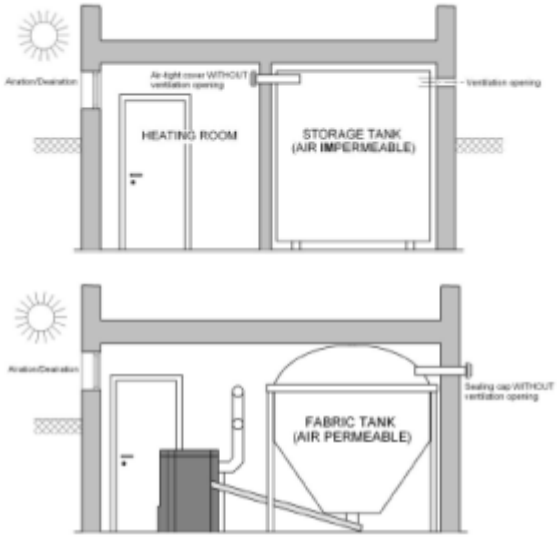
Edition: 1 October 2012

Compressed Pellets from Natural Wood – Wood Pellets

Requirements for End-user Storage of Pellets

English translation of Austrian M 7137 standard for delivery and storage of bulk pellets

Sample diagrams of ventilation requirements



Information Gathering Relating to Policies and Standards

Austria, Germany, Sweden and Canada


Anhang Ausführungsbeispiele geeigneter Warnhinweisschildern gemäß Abschnitt 9.2

Holzpellet-Lagerraum

- Zutritt für Unbefugte verboten, Kinder fernhalten!
- Rauchen, Feuer und andere Zündquellen verboten!
- Pelletkessel mind. 1 Stunde vor der Befüllung abschalten!
- Vor dem Betreten ausreichend belüften!
- Verletzungsgefahr durch bewegliche Bauteile!
- Auf ordnungsgemäße Befüllung achten!

Deutscher Energieholz- und Pellet-Verband e.V. (DEPV)
www.depv.de

Bild A1. Ausführungsbeispiel für ein Warnschild zur Kennzeichnung eines Pelletlagers mit weniger als 10 t Fassungsvermögen (Bildquelle: Deutscher Energieholz- und Pellet-Verband e.V. (DEPV), Berlin)

Model Warning placards for storage room entry doors – multiple countries

Information Gathering Relating to Policies and Standards

Austria, Germany, Sweden and Canada

VDI-RICHTLINIEN

VEREIN DEUTSCHER INGENIEURE	Emissionsminderung Lagerung von Holzpellets beim Verbraucher Anforderungen an das Lager unter Sicherheitsaspekten	VDI 3464 Entwurf

English summary translation of German VDI 3464 pellet storage standard

Upcoming Pellet Storage Project Tasks

- Safe Pellet Project Workshop – Austria
- Additional webinars on workplace safety standards
- Northeast Biomass Heating Conference presentation
- Technical article for biomass publication

Waltraud Emhofer

- Researcher, Bioenergy 2020
- **Update on the Safe Pellet Project**

bioenergy2020+

Off-gassing parameters Ventilation of storage facilities Update on SafePellets project

Waltraud Emhofer

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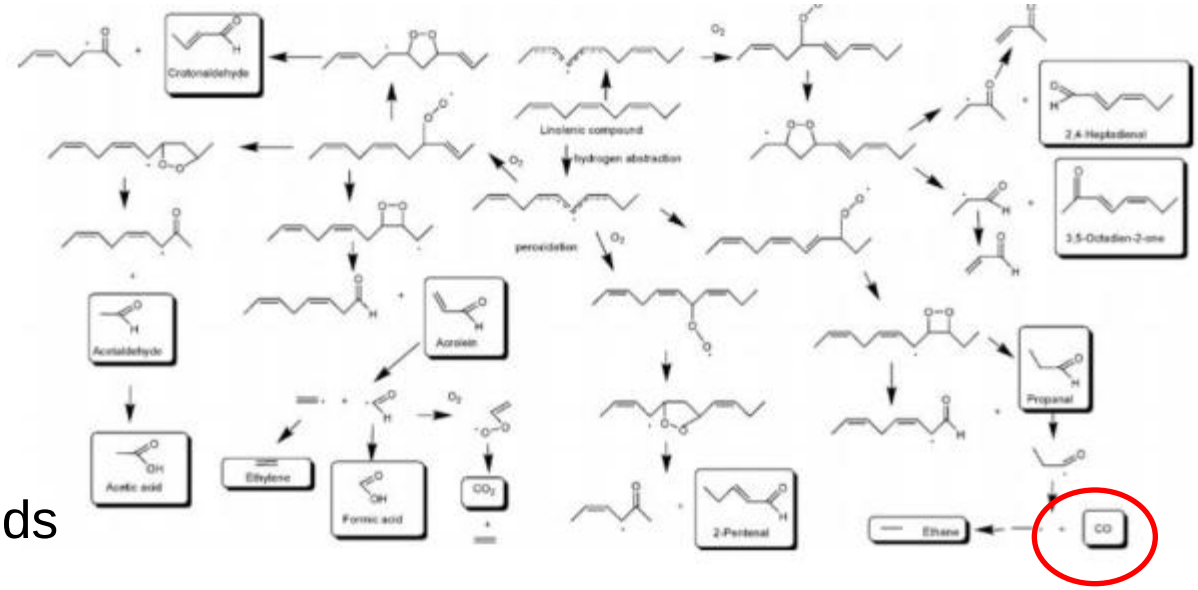
Current knowledge: Formation of CO and volatile organic compounds (VOC)

Influential parameters

- Age (Time in storage)
- Mechanical stress (filling of storage)
- Wood species
- Temperature
- Pelletizing process

Source

- Oxidation reactions of unsaturated fatty acids



Oxidation mechanism of linoleic acid [Bogdan et al., Ind. Eng. Chem. Res., 51 (16), 5653-5661, 2012]

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Wood species – extractive content

- Best investigated wood species for CO release
  - Pine
  - Spruce
  - Larch
  - Ash tree

  ↑ highest reported CO release rates

  - Very little to no data on hardwood
- Extractive Content reported
  - Pine
  - Spruce
  - Larch
  - Ash tree

  ↑ highest reported extractive content
  BUT: large variations within species!

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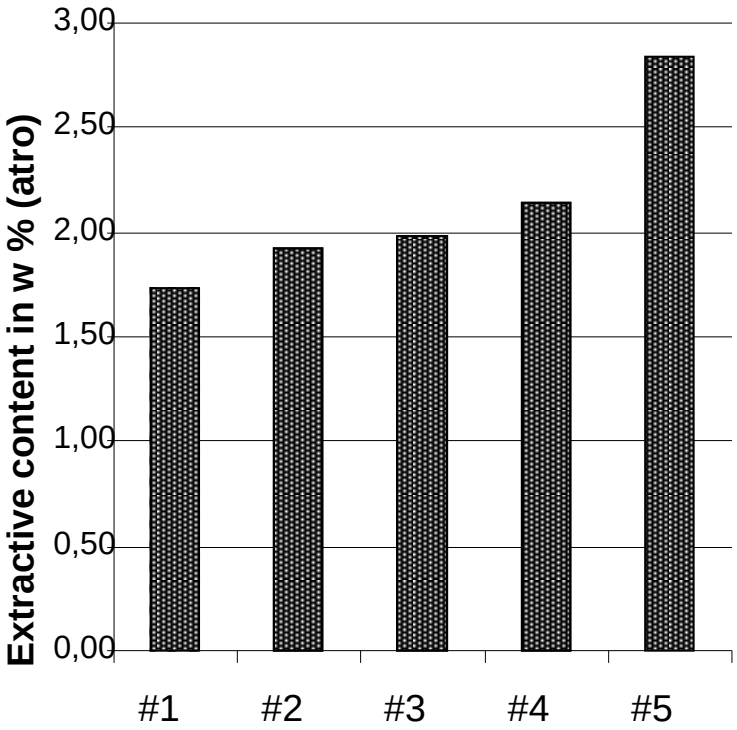
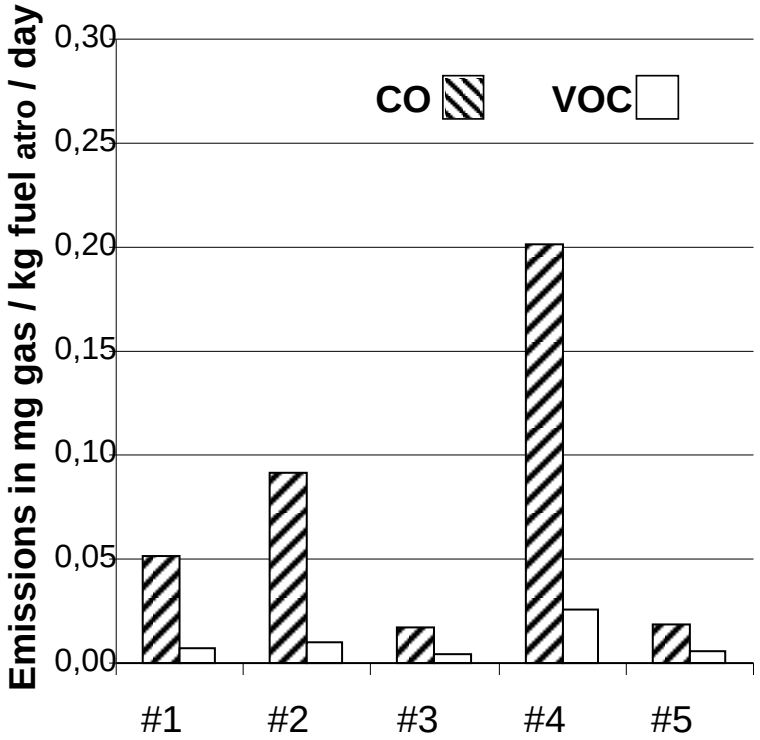
Extractive Content – Emission release

- 5 industrially produced spruce pellet samples





Problem: Extractives are determined as a sum.
How much is on surface/ accessable is determined by production process.

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Data on CO levels in small-scale pellet storages in Austria

- 31 indoor pellet storages
- Monitoring periode 1 year
- Spruce pellets
- CO levels, Temperature

Maximum CO Level [ppm]	Number of storages	Ø number of days CO Level < 100 ppm	Ø number of days CO level < 30 ppm
>1000	2	44	80
501-1000	3	17	39
101-500	15	20	43
31-100	6	-	23
0-30	5	-	-

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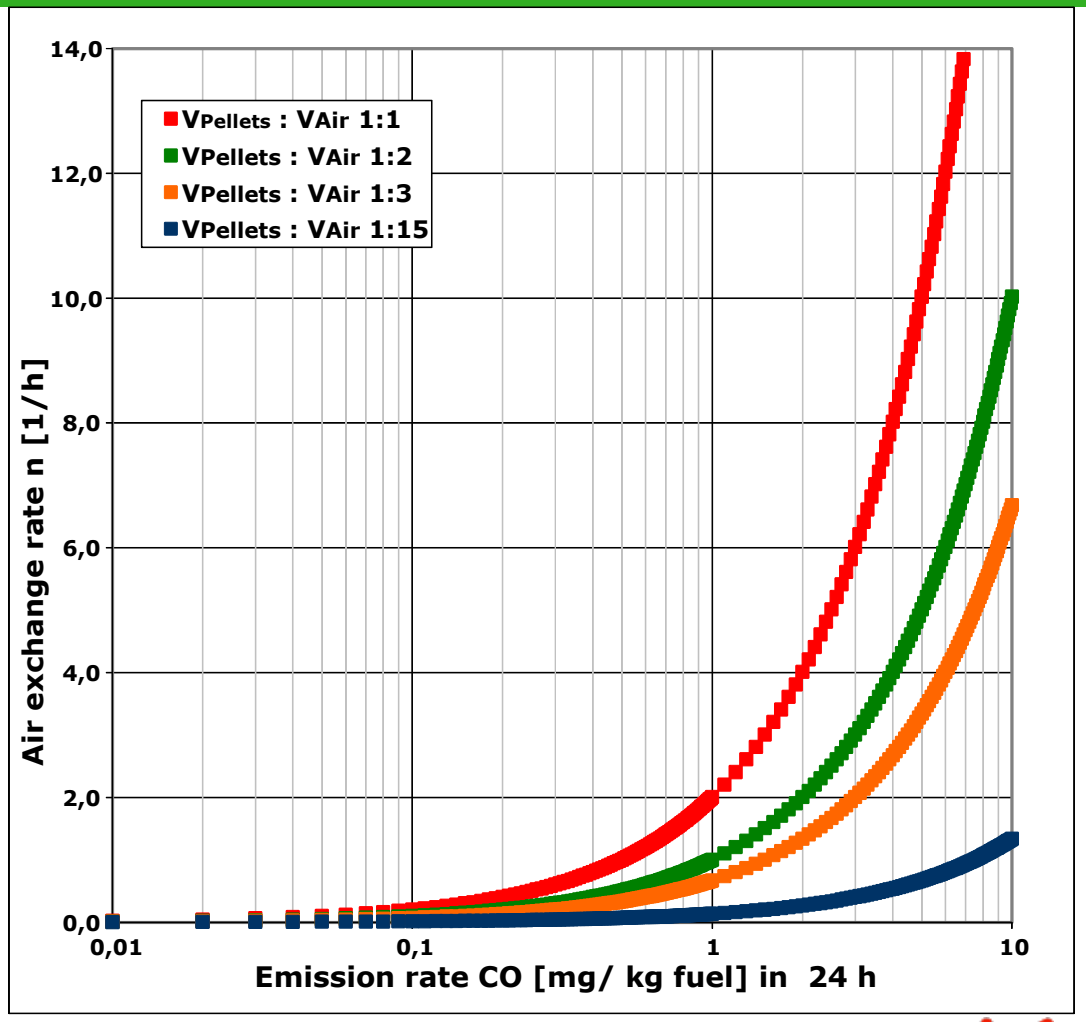
Calculated air exchange rates for pellet storages of varying filling degrees

- Target CO level 30 ppm (occupational exposure limit)
- Necessary air exchange is a function of CO release rate and filling degree of pellet storage
- Calculations based on: Recknagel et al. 2009 „Taschenbuch für Heizung + Klimatechnik“, Chapter 3.5.1.; page 1300



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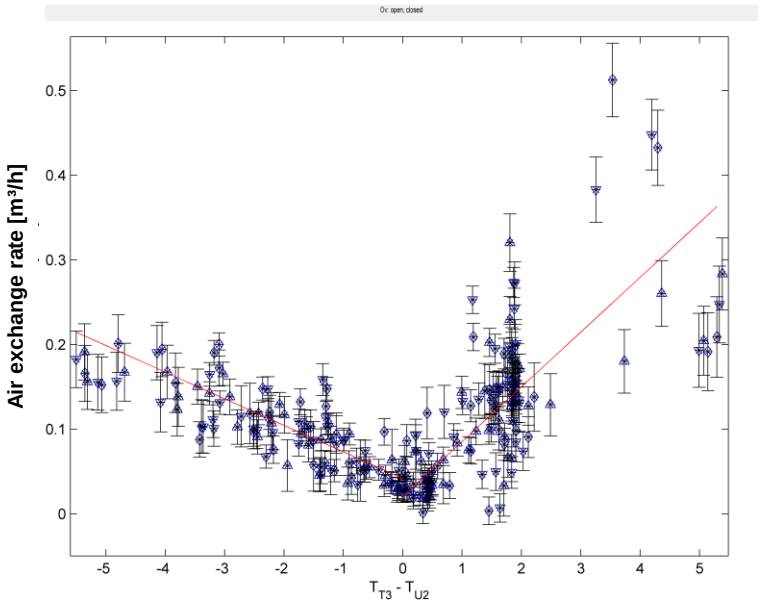
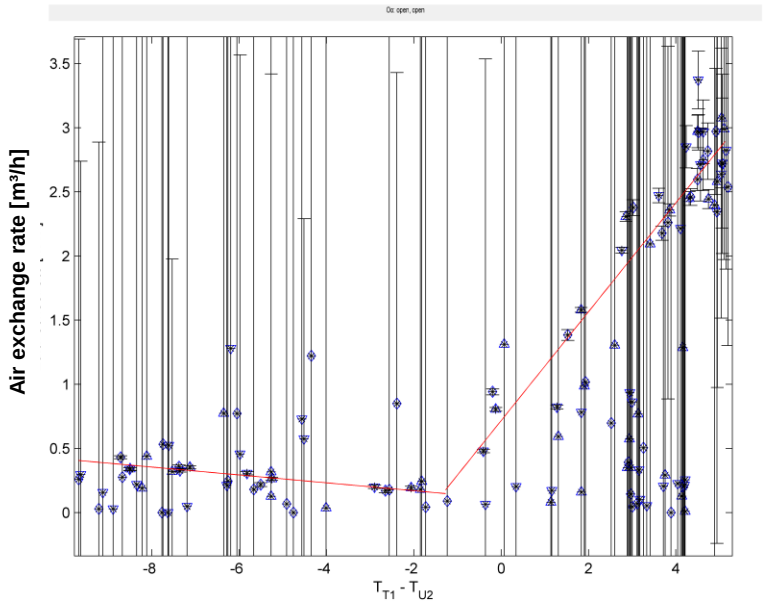
Examples for measured air exchange rates for natural ventilation

- Driving force for air exchange is a difference in temperatures (inside storage facility – outside)
- 8 m³ pellet storage silo – ventilated by opening one respectivly two filling pipes (Ø 110 mm - Storz A coupling; lenght of pipe 1 m)





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Status Standardization of Safety Measures: Austria

- ÖNORM M 7137 *„Compressed wood in natural state – Woodpellets – Requirements for starge of pellets at the ultimate consumer“* (Austrian standard)
  - **On Ventilation**
    - Continuous natural ventilation or
    - On-demand mechanical ventilation
    - Necessary air exchange rates have to be reached (not specified what is enough)
    - Prior to and whilst accessing a storage facility must be ventilated, furthermore whilst accessing the storage entrance doors must stay open
    - For natural ventilation:
      - Pipe diameters must be > Ø 90 mm
      - Pipe lengths must be < 200 mm

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Status Standardization of Safety Measures: Germany

- VDI 3646 *„Emission control – Storage of wood pellets at the end user – Requirements for the sotrage room concerning safety aspects“* (German Guideline – still in draft stage)
  - **On Ventilation**
    - Continuous natural ventilation or
    - On-demand mechanical ventilation with an air exchange rate of 3 times the gross volume of the storage room – start function must be coupled with opening of entrance door
    - For natural ventilation:
      - Pipe diameters must be > Ø 90 mm
      - Pipe lengths must be < 200 mm

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SafePellets - Safety and quality assurance measures along the biomass pellets supply chain

- Project Objectives
  - Development of **guidelines and recommendations** for the biomass pellets industry
  - **Support of standardization** work
  - **Identification of** key parameters for **self-heating** and **off-gassing** of biomass pellets
  - **Introduction of solutions** to improve control over self-heating behaviour and off-gassing in pellet storages

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Work programme of SafePellets

- **Work of first project year (2012)**
  - **Characterization** of different pellet types
  - **Quantify** self-heating and off-gassing from biomass pellets **and determine the underlying mechanism**
  - **Develop characterization methods** for self-heating behaviour and off-gassing
- **Work of second project year (2013)**
  - **Develop technical** and **quality measures** to improve control of self-heating behaviour and off-gassing
  - Carry out **storage experiments** on small to large scale to **validate** measures (Denmark, Austria, Sweden)
  - **Host workshops** with industrial stakeholder to disseminate project results – next workshop 4.-6th of March in Fügen, Austria

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Als Mitglied des Fachverbandes vertreten bei

Christian Rakos

- President, European Pellet Council
- **Dealing with off-gassing of Pellets: Experiences in Austria**

How the issue came about

- Lethal accident in a pellet storage of a residential block in Germany
- Incident was only covered by local media
- The whole pellet sector was extremely alarmed
- Previous accidents on ships where not considered comparable to normal storage conditions

Our first reaction

- Find out more about off-gassing
- Research project with Bioenergy 2020 initiated immediately after the incident
- Main concern: approx. 80.000 pellet storage rooms in private homes
- How can we deal with these ?
- Fear of huge PR disaster
- The real danger was in large storage rooms – wrong focus

Our first reaction

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pro»pellets Austria

Priorities as we started to understand the issue

- Produce warning signs for pellet storage rooms – liability!
- Different warning signs were produced for residential and commercial storage rooms
- Warning signs were delivered by pellet distributers to private customers and via boiler manufacturers to their commercial customers

Besides warning customers we were looking for a remedy

- Low cost solution
- Easy retrofit
- Idea to allow ventilation via the pellet supply ducts
- Development project with an engineering consultant for a cap that would allow ventilation but keep rain water out

Testing of a prototype of the new ventilation cap by Bioenergy 2020

- Ventilation significantly decreased maximum CO concentration
- Decision to invest in producti tool for this ventilation cap by proPellets
- Problem: standard for pellet storage still recommended air tight storage rooms

pro»pellets Austria

Priority: change the standard !

- Producing a new version of the pellet storage standard was part of the project of Bioenergy 2020
- Obstacles: commercial strategies and interests of individual companies
- Wanted to establish a standard our solution would not comply with

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Goal: accelerating retrofit to take place before the standard was changed

- Proved impossible !
- Passive resistance of most actors involved

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Approaches we considered for organizing the retrofit

- Free retrofit – boiler manufacturers should pay for the caps (approx. 6 $ per piece, 12 $ per customer)
- Costs not accepted, difficult to attribute costs
- Service personel of boiler manufacturers retrofit during service/maintenance: very slow replacement, many customers have no maintenance for years

Replacement by pellet suppliers

- Concept to sell ventilated caps at price that would be attractive for pellet suppliers
- Folder for customer information
- Still not a great succes
- Very dependent on motivation of driver

Additional ways of distribution

- Via service technicians
- Via installers
- In Germany: webshop of the pellet association

What we learned

- Customers did not seem to be alarmed even when informed about the danger by our folder
- Total disregard of the issue by media
- Pretty significant disregard of the issue even in the pellet community
- Lack of safety orientation even with operators of large storage rooms – refused to install ventilated caps!

What did associations in other countries do?

- Focus on warning signs on storage rooms
- Some promoted retrofit of ventilation caps
- Limited amount of engagement
- Few countries have large number of existing storage rooms
- Now all new pellet boilers are delivered with ventilation caps.

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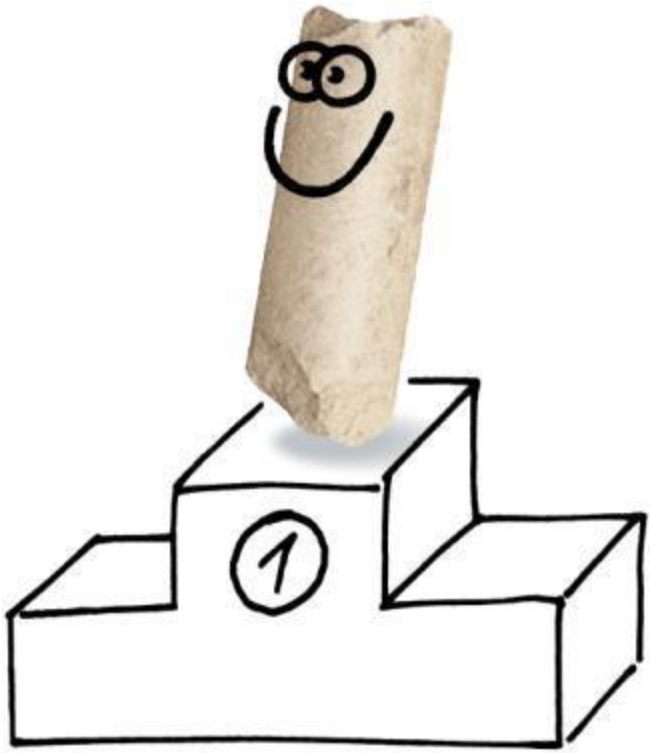
A key issue still missing in many countries: clear guidelines for pellet storage rooms

- Mainly important to make sure pellets are not destroyed during delivery
- Also important to ensure proper safety
- European Pellet Council is planning to publish pellet storage guidelines

pro»pellets Austria

First International Pellet Safety Conference: March 4-6 2013 in Fügen (Austria)

- Address all safety issues!
- Offgassing, dust explosion & fire, self heating
- Actors from the entire value chain will participate: production, storage, sea transport, small scale use and power plant operation
- Purpose: create a safety agenda for the sector: What needs to be done to improve safety significantly?
- Registration still possible: www.pelletcouncil.eu



Thank you for your attention!

Tim Cullina

- Senior Consulting Engineer, Fauske & Associates

- **Confined Storage and Combustible Dust**

CO Off-Gassing: Relevant U.S. Safety Standards Confined Spaces, Carbon Monoxide, & Combustible Dust

Timothy Cullina P. E.
Senior Safety Engineer
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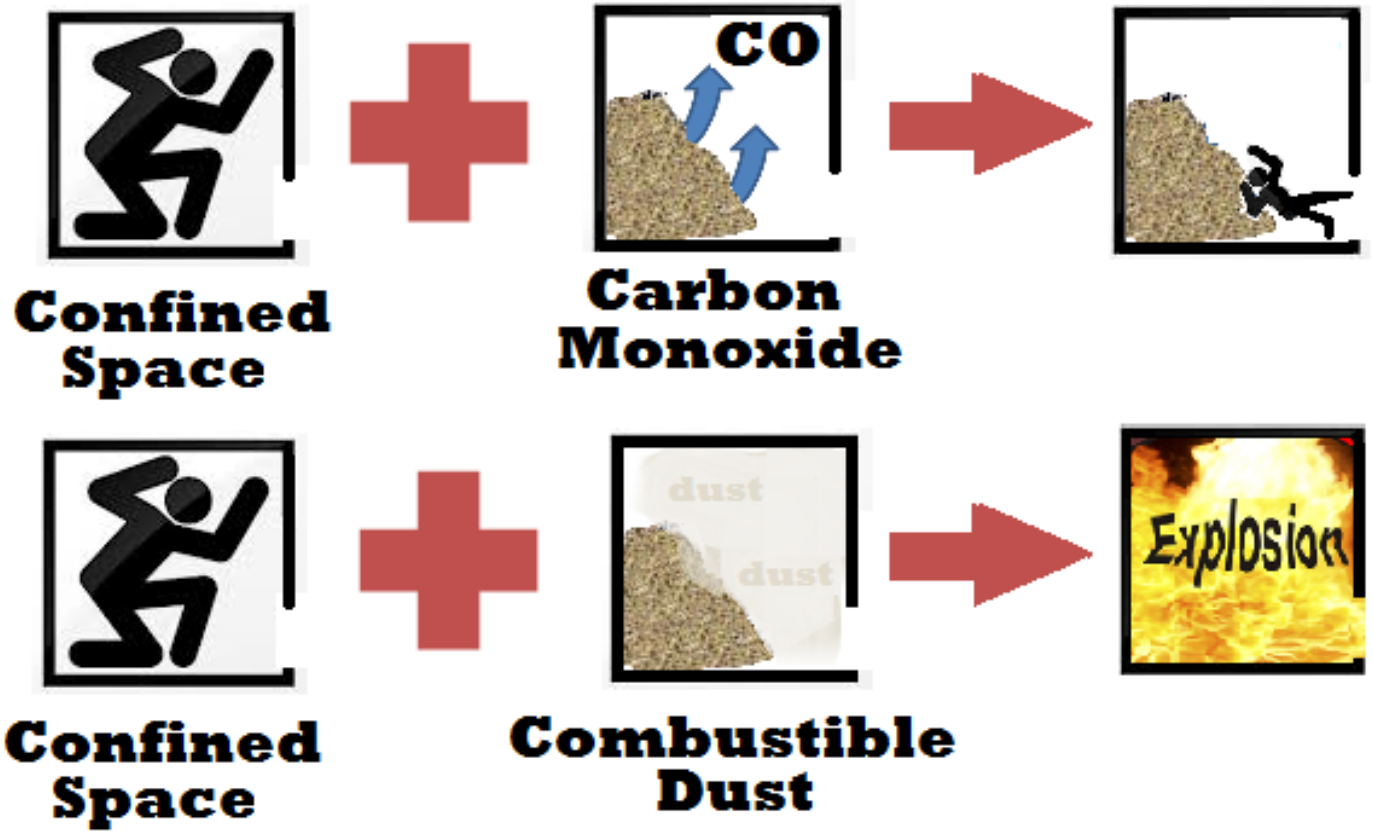
Dangers of Confined Spaces



Examples of "Typical" Confined Spaces

- Pipeline
- Pit
- Pumping station
- Reaction or process vessel
- Mills
- Silo
- Storage tank
- Barges
- Sewer
- Utility vault
- Trenches
- Shafts
- Caissons
- Coal bins

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How to Identify Confined Spaces

29 CFR 1910 .146 Permit-required confined spaces

Space large enough to enter

+

Limited or Restricted Entry or Exit

+

Not Designed for Continuous Worker Occupancy

Large Enough, but Limited Openings for Entry/Exit

source: osha.gov Training Grant Materials

Not Designed for Continuous Worker Occupancy

- Most confined spaces are not designed to enter and work in on a regular basis
- They are designed to:
  - Store a product
  - Enclose materials or processes
  - Transport products or substances
  - Allow occasional worker entry for inspection, repair, cleanup, maintenance, etc

source: osha.gov Training Grant Materials

Permit-Required Confined Spaces
29 CFR 1910.146

- Scope and application
- Definitions
- General requirements (to include development of written plan)
- Permit-required confined spaces
- Permit system
- Entry permit
- Training
- Duties of authorized entrants
- Duties of attendants
- Duties of entry supervisors
- Rescue and emergency services
- Employee participation

Appendices
29 CFR 1910.146

- Appendix A – Permit-Required Confined Space Decision Flow Chart
- Appendix B – Procedures for Atmospheric Testing
- Appendix C – Examples of Permit-Required Confined Space Programs
- Appendix D – Confined Space Pre-Entry Check List

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Who Decides What A Confined Space Is

- Employer must evaluate a space based on the definition, NOT on whether or not you may enter the space.

Two Types of Confined Spaces
29 CFR 1910.146

- Permit required
  - Meets confined space definition, and
  - Has inadequate ventilation, or
  - Has a hazardous health or safety condition, or
  - Has a known or potential hazardous atmosphere, or
  - Any other recognized serious hazard

- Non-permit required
  - Meets confined space definition
  - Has adequate ventilation
  - Does not contain any hazards that can cause death or harm
  - There is absolutely no potential for a hazardous atmosphere

WARNING: Don't make a false assumption that a non-permit space or a space that is not "confined" is a **SAFE SPACE.**

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Related OSHA Standards

- General Industry Standards
  - 1910.1200 – hazard communication
  - 1910.132 – personal protective equipment
  - 1910.38 – emergency action plans
  - 1910.94 – ventilation
  - 1910.134 – respiratory protection
  - 1910.147 – lockout/tagout
  - Other depending upon hazards

Hazards of Confined Spaces
29 CFR 1910.146

- Oxygen Deficient Atmospheres
- Oxygen Enriched Atmospheres
- Flammable Atmospheres
- Toxic Atmospheres
- Temperature Extremes

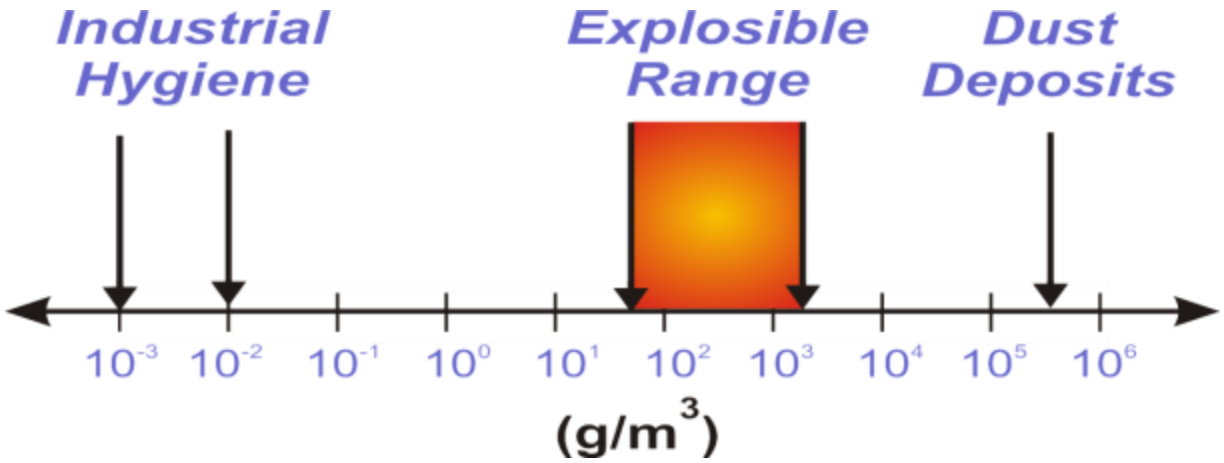
- Engulfment hazards
- Slick/wet surfaces, falling objects, noise
- Mechanical hazards
- Configuration hazards
- Other hazards

Flammable/Explosive Atmospheres
Combustible Dust

- Critical Factors:
  - Oxygen content in the air
  - Presence of a flammable gas, or vapor
  - Presence of dust
- Proper air/gas or dust mixture can lead to explosion
- Typical Ignition Sources:
  - Sparking or electric tool
  - Welding/cutting operations
  - Smoking

In Confined Spaces, Dust is Dual Hazard

- Combustible dust can be hazardous to health and can be a fire or explosion hazard



WOOD DUST	ACGIH	NIOSH	OSHA	MIE	MEC
	TLV-TWA	REL	PEL	<20	400 - 500
TOTAL	1 mg/m^3	1 mg/m^3	15 mg/m^3	mJ	g/m^3
RESPIRABLE			5 mg/m^3		

Fugitive Dust Accumulations

NFPA Recommended Housekeeping and Electrical Classification

Depth of Dust Accumulation (in.)	Frequency	Housekeeping Requirements	Area Electrical Classification
< 1/32	Continuous / frequent	Clean up as necessary to maintain an average accumulation below 1/64 in.	Unclassified; however, electrical enclosures should be dust tight
1/32 to 1/8	Infrequent	Clean up during same shift	Unclassified; however, electrical enclosures should be dust tight
1/32 to 1/8	Continuous / frequent	Clean as necessary to maintain an average accumulation below 1/16 in.	Class II, Division 2
> 1/8	Infrequent	Immediately shut down and clean	Class II, Division 2
> 1/8	Continuous / frequent	Clean at frequency appropriate to minimize accumulation	Class II, Division 1

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60

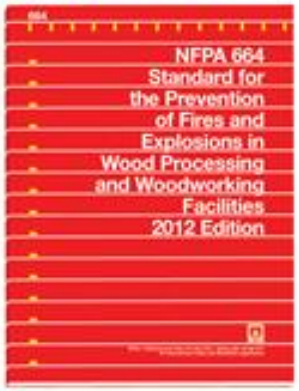
Combustible Dusts

- Wood products – pellets, saw dust, shavings
- Metal powders – aluminum, magnesium
- Rubber/plastic/spices/food products

NFPA Standards

- NFPA Consensus standards provide detailed guidance for preventing and mitigating dust fires and explosions and are widely considered to be effective

These NFPA Standards are now part of the International Fire Code and Uniform Fire Code, and the International Building Code



NFPA Dust Hazard Standards

NFPA publishes 5 occupancy standards that are focused on dust explosion hazards

- NFPA 654 non specific dust
- NFPA 61 grain dust
- NFPA 664 wood dust
- NFPA 484 metal dust
- NFPA 655 sulfur dust

NFPA publishes 7 design standards referenced in the 5 occupancy standards

- NFPA 68 explosion venting
- NFPA 69 explosion suppression
- NFPA 91 ventilation
- NFPA 13 sprinkler systems
- NFPA 15 sprinkler systems
- NFPA 72 fire alarms
- NFPA 70 – NEC
  - NFPA 499 electrical classification
  - NFPA 77 static electricity

NFPA Standards

- OSHA uses NFPA Standards as RAGAGEP – "Recognized and Generally Accepted Good Engineering Practices"

OSHA may cite the General Duty Clause if hazards are not identified and mitigated per RAGAGEP

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Toxic Atmospheres in Confined Spaces

- Product stored in a confined space:
  - Gases released when cleaning
  - Materials absorbed into walls of confined space
  - Decomposition of materials in the confined space
- Work performed in a confined space:
  - Welding, cutting, brazing, soldering
  - Painting, scraping, sanding, degreasing
  - Sealing, bonding, melting
- Areas adjacent to a confined space
  - Exhaust , pumps, generators

If Unfavorable Natural Ventilation in Wood Pellet Storage Area

- Lack of air movement in and out of the space can create an atmosphere much different than the outside atmosphere
- Deadly gases can be trapped inside
- Organic materials can decompose
- May not be enough oxygen due to presence of other gases or chemical reactions such as rusting

Carbon Monoxide

- Carbon monoxide is an odorless, colorless and toxic gas
  Because it is impossible to see, taste or smell the toxic fumes, CO can kill you before you are aware of it
- More than 150 people in the Unites States die every year from accidental non-fire related CO poisoning associated with consumer products

Test Before Entry

- Before employee enters space, internal atmosphere shall be tested, with calibrated direct-reading instrument, for following conditions in order given
  - Oxygen content
  - Flammable gases and vapors
  - Potential toxic air contaminants (e.g., carbon monoxide)

Source: osha.gov Training Grant Materials

OSHA Required Carbon Monoxide Monitoring

An exposure to any substance listed in Tables Z-1, Z-2, or Z-3 shall be limited in accordance with the requirements of 1910.1000. Exposures to hazardous and toxic substances are also addressed in specific standards, such as powered industrial trucks (forklifts, etc)

Carbon Monoxide is listed in Table Z**-1**

1910.178 (i)(1)
Internal combustion engine powered industrial trucks.
…employers shall monitor environmental exposure of employees to CO whenever internal combustion engine powered industrial trucks are operated indoors to ensure that CO levels do not exceed 50ppm

Symptoms of CO Poisoning

- Headache
- Dizziness
- Weakness
- Nausea
- Vomiting
- Chest pain
- Confusion

Carbon monoxide molecules are 200 times more likely to bind to hemoglobin than are oxygen molecules

Carbon monoxide crowds out the oxygen molecules depriving the body of the oxygen

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Carbon Monoxide

An Odorless, Colorless, Tasteless Gas

PPM	Effect
50	Permissible Exposure Level
200	Slight headache, discomfort
200	Headache, discomfort
1000-2000	Confusion, nausea, headache
1000-2000	Tendency to stagger
1000-2000	Slight heart palpitation
2000-2500	Unconsciousness

Extended exposures can lead to brain and organ damage and death

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Exposure Limits

OSHA PEL OLD ACGIH TLV	50 ppm
NIOSH REL BASED ON CARDIOVASCULAR EFFECTS	35 ppm
ACGIH TLV BASED ON CARBOXYHEMEGLOBIN EFFECTS	25 ppm

Other Hazards in Confined Spaces

- Noise
  - Amplified due to acoustics within the space
  - Damaged hearing, affect communication
- Slick / Wet Surfaces
  - Slips and falls.
  - Increased chance of electric shock.
- Falling Objects
  - Topside openings expose workers inside confined space to falling objects.
- Mechanical
  - Drive Shafts, Drive Gears
- Configuration
  - Pipes, low walls, around corners
- Animals

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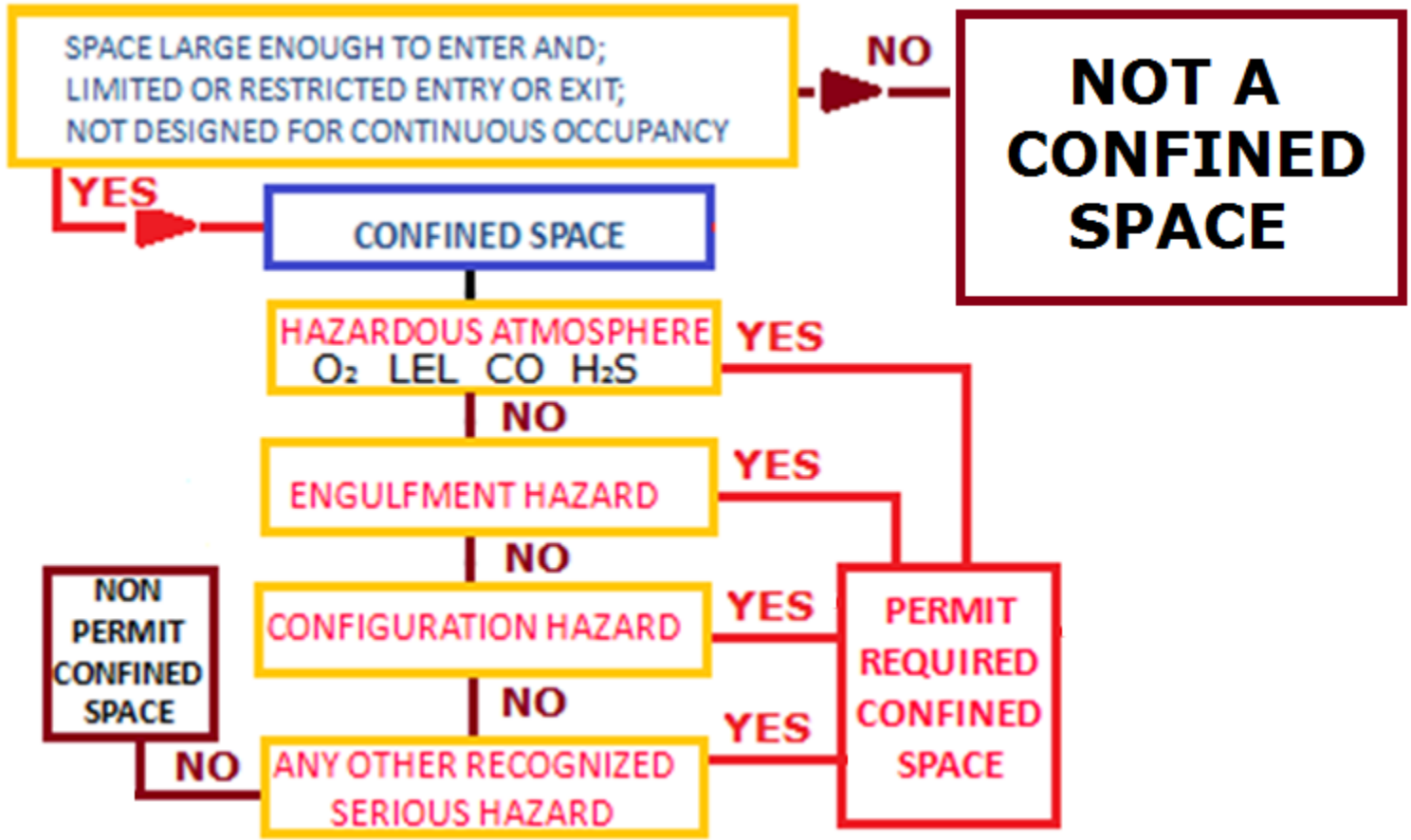
Other Hazards

Source: osha.gov Training Grant Materials

Categorizing Confined Spaces

29 CFR 1910 .146 Permit-required confined spaces



Recommendations

- Identify all confined spaces and comply with OSHA standards
- For non-confined space storage areas:
  - Treat all storage spaces as hazardous until proven otherwise
  - If possible, identify all hazards in storage space before entry
  - Respond appropriately to hazards before entry

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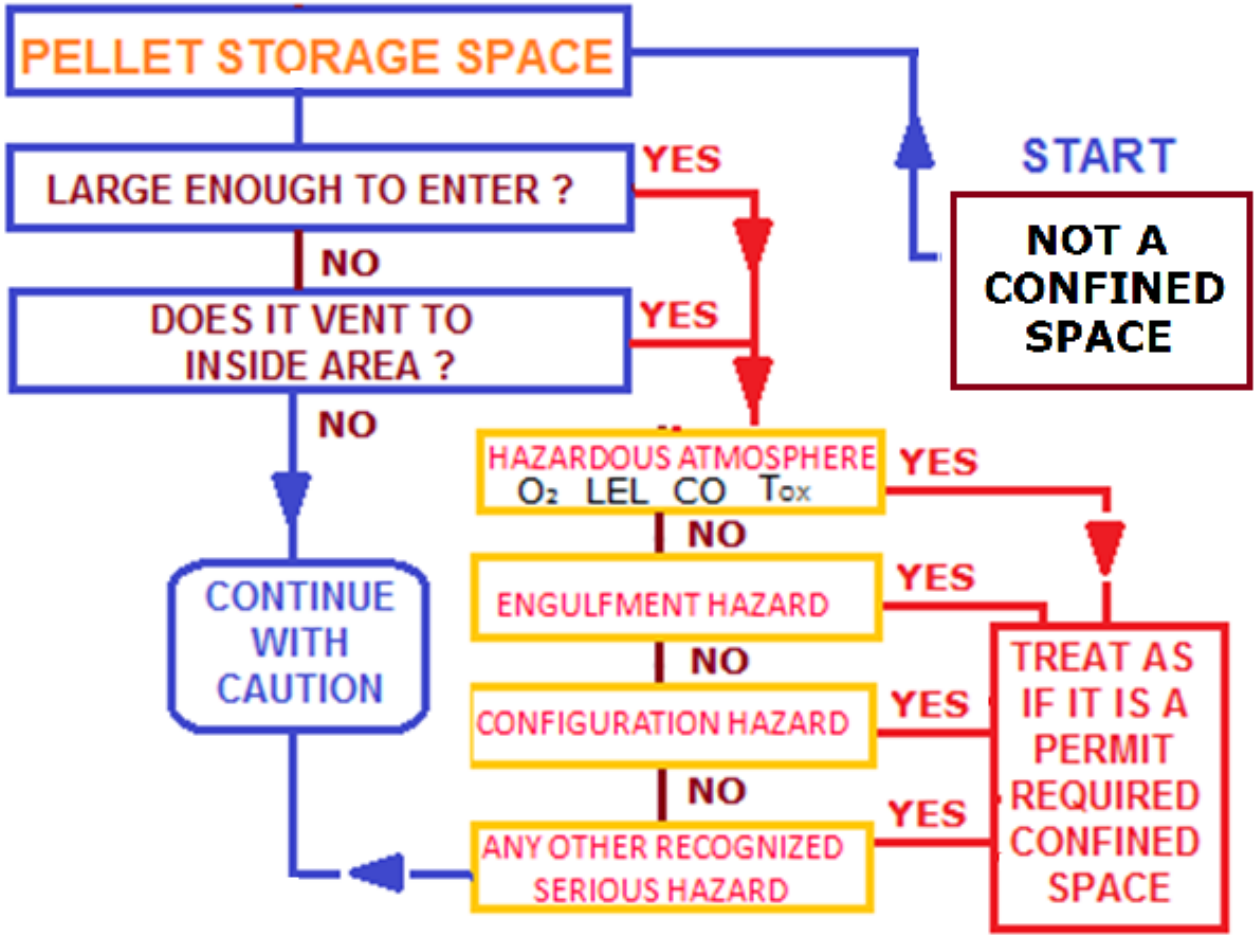
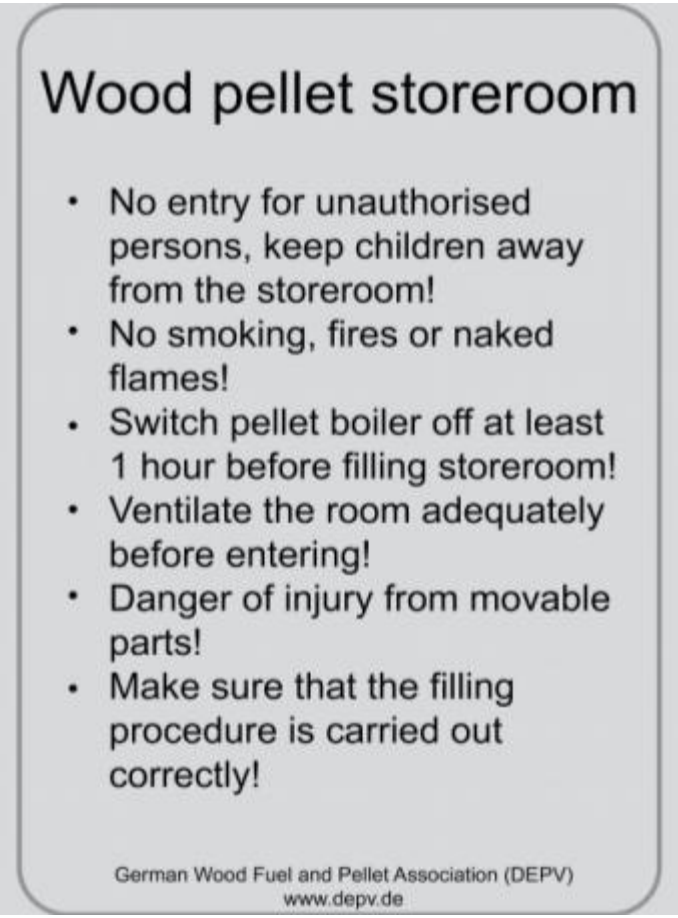
Categorizing Storage Areas

Modified from 29 CFR 1910.146 Permit-Required Confined Spaces



Warning Sign & Safety Instructions from the DEPV



Source: Gauthier S et al. Ann Occup Hyg 2012;56:755-763

Thank you

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Q & A

Ask questions using the **Questions Panel** on the right side of your screen.

The webinar slides and recording will be made available after today.

Look for future project updates from BTEC staff throughout Q1 and Q2 of 2013

Upcoming Related Events

- **World Sustainable Energy Days**
  - February 26-March 1, Wels, Austria
  - www.Wsed.at
- **International Workshop on Pellet Project**
  - March 4-6, Fugen, Austria
  - www.pelletcouncil.eu
- **Biomass Heating Expo 2013**
  - April 3-5, 2013, Saratoga Springs, NY
  - Pellet storage & safety on Day 2
  - Nebiomassheat.com

Thank you for attending today's webinar!

For more information, contact:

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