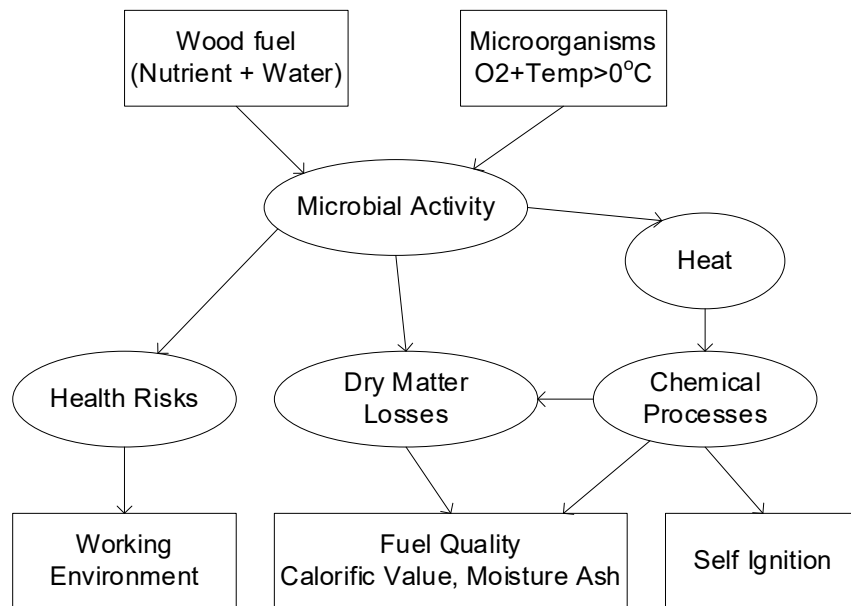


# Best Practice Fibre Pile Management

## General

- Once a fresh biomass is comminuted (size reduction by chipping or hogging) and piled, a number of biological, physical and chemical processes take place.
- Smaller particle size the larger biological activities
- Respiration of plant cells and microbial growth are the main biological activities that lead to heat release inside the pile.
- Due to limited air passage inside the pile and the low conductivity of woody biomass, the heat accumulates reaching around 60°C. The wider the pile, the slower heat transfer from inside to the outside.
- At 80°C and higher most of the biological activities cease.
- Further heat development results from subsequent physical and chemical processes such as water transport and adsorption, hydrolysis, chemical oxidation and charring.
- Dry matter loss, deterioration of fuel quality (loss of BTU) and heat accumulation may ultimately lead to spontaneous ignition.
- Moist wood chip and saw lead to the development of high concentrations of bacterial particles and fungal spores creating an unacceptable working environment



## Outdoor storage

- The storage should be placed preferably on dry, level ground close to the transport road.
- The ground should be free of stumps, stones and large residues.
- Asphalt or concrete ground surface is preferred.

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- The storage should be placed higher than the roads to avoid percolation of rain water from the road to the storage.
- Covering the outside storage to avoid precipitation is preferred.
- Store dry fuels (<20% moisture content) to avoid microbial growth
- Fuels of different qualities should never mix when stored.
- Store preferably in small piles and for a short time.
- Store the material such for FIFO (First In-First Out)
- Avoid compaction of the material – running heavy equipment on the material.
- Raise piles in elongated stacks. Base width twice the height of the stack.
- Typical height:  
clean wood chips without bark 15 m  
chipped forest residue 15 m,  
bark 7 m,  
sawdust 6 m.
- The risk of spontaneous ignition increases if the raw material or solid biofuel is initially moist, the stored volume is large and the ambient temperature is high.
- Short storing periods are preferable and storage control essential.

### Controls

- Monitor the temperature at several different locations in the bulk;
- Measure the CO concentration in the air above the fuel surface is one possible method for detection of
- activity in the fuel bed.
- Other detection methods include multi-gas detectors and sensitive “electronic nose” type
- of detectors;
- The first sign of an ongoing self-heating process is often a sticky and irritating smell;
- Initiate fire fighting if “fire smell” is sensed from the storage and/or if smoke (not water vapour) is observed.

### Ignition sources

- hot points or fire pockets in fuel or raw material delivery;
- receiving operations (screening, crushing) connected with spark forming impurities of fuel or raw material;
- hot work in conjunction with inadequate cleaning and preparations
- equipment having a surface temperature above 100 °C for continuous operation
- electric motor overload,
- friction in handling and conveyor system,
- temperature rise in gears and/or bearings.

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