



Fuels Safety Program	Ref. No.: FS – 089 - 06	Rev. No.:
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Subject: Tobacco Kilns
Sent to: Posted on the TSSA Web-Site, Ontario Flue-Cured Tobacco Grower’s Marketing Board, Heat Exchanger Manufacturer’s

1.0 Background

During the 2005 curing season, the Technical Standards and Safety Authority (TSSA) investigated a number of fires involving tobacco kilns. These kilns were retrofitted with heat exchangers certified to *CSA-TIL No. R-11 – Indirect Fired Tobacco Drying Equipment*.

Our investigations, and industry have identified that the following conditions may contribute to a potentially hazardous situation such as a kiln fire:

1. Lack of or improper maintenance of heating equipment,
2. Defective or failed heat exchanger,
3. Retrofit heat exchanger installed in a kiln for which it was not certified and is consequently unapproved, and
4. Excessive heat build-up on combustibles (such as the wooden part of the drying unit located directly above the heat exchanger) during a power outage or air circulation failure.
5. Too fast or improper heat rise inside the kiln during the casing process of the tobacco.

2.0 Recommendations

To reduce the risk of kiln fires, the following is recommended:

Items 1 & 2 – Heating Equipment Maintenance/Defective Heat Exchanger

Since tobacco kilns only operate for about 2 to 3 months per year. The TSSA recommends that the entire kiln assembly be inspected prior to curing season use by a TSSA certificated gas technician. This inspection should include, but is not be limited to, the kiln (to ensure it is in good condition and adequate for operation), heat exchanger, burner and the functionality of safety controls.

Item 3 – Ensure the Heat Exchanger is Certified for Use in the Specific Drying Unit

Some retrofit heat exchangers were installed in kilns for which they were never tested as an assembly and consequently are not approved. For example, a HeatX heat exchanger, by Gas-Fired Products, is not currently certified for use in a DeCloet kiln. A heat exchanger that is installed in the wrong kiln may result in excessive hot spots that consequently may cause a fire. To ensure the entire assembly is approved, please consult the certified instructions, the heat exchanger manufacturer or the certification agency.

Item 4 – Excessive Heat Build Up due to Power Outage/Air Circulation Failure (Bulk Kiln's)

During a power outage or air circulation failure inside the Bulk kiln, dangerously hot temperatures may occur above the return air opening of the heat exchanger assembly, see photo #1. This is the result of heat being emitted from the heat exchanger by natural convection. This is especially prevalent when the kiln is operating in the high heat mode. The temperature inside the kiln during this mode is often between 150 to 160°F. Under this situation, limited field testing has shown that temperatures may increase up to 50°F above acceptable limits for combustible materials.

The TSSA strongly urges kiln owners to take appropriate steps in order to mitigate this potential hazard. These steps may include installing thermal insulation or heat shields that provide temperature protection. To protect against a power outage, use a standby generator as back-up power. To ensure the best hazard prevention solution for your kilns, consult with the heat exchanger manufacturer or a Professional Engineer knowledgeable in this area.

Item 5 – Too Fast of a Heat Rise During the Casing Process

During the casing process, too fast or improper heat rise inside the kiln may cause the dry tobacco leaves to become flammable. It is recommended to follow the kiln manufacturer's instructions for the proper heat rise and associated moisture injection.

Photo #1

