

# Keeping your Tissue Safe (Equipment Trial)

**David Butler**

Supervising Scientist, Anatomical Pathology, Prince Charles Hospital, Chermside, Brisbane.

## Aims

- To determine if formalin use could be significantly reduced in operating theatres without adverse effects on surgical specimens
- To determine the suitability of existing courier arrangements for a formalin free preservation system.

## Introduction

The Prince Charles Histopathology Laboratory (Chermside) services hospitals located at Caboolture (40km to the north) and Redcliffe (25km to the north).

Surgical specimens from these hospitals come as formalin fixed, or fresh for Histopathology and Ancillary investigations.

Caboolture was chosen as the site to implement an equipment trial of the Milestone Srl TissueSAFE unit. A decision based on Operating staff concerns of exposure to formaldehyde, and the opportunity to identify any transportation issues.

The TissueSAFE unit was setup in Caboolture Pathology relocated to the Operating Theatre suite, where staff were trained to use it.

The transportation and handling of specimens was reviewed and process changes made.

### Milestone Srl TissueSAFE Unit and Sealed Specimen



## Materials and Methods

- For a period of 5 weeks, 65 specimens were collected from morning surgical patients at Caboolture Hospital and processed using the Milestone Srl TissueSAFE vacuum sealing unit. Program 2 was utilized.
- The specimens were refrigerated at 4°C until delivery to Caboolture Pathology laboratory for courier transport to our laboratory.
- Route: Caboolture – Redcliffe – Chermside Time: 1.5 – 2.5 hours
- The refrigeration unit was calibrated and remained at 4°C +/- 1°C over the trial period.
- An empty 25L Esky was calibrated with Data loggers (Graph 1).
- Wire racks, Bubble wrap and cardboard were used as separators between ice packs and specimens.
- The MilestoneSrl RFID temperature monitoring card was used and read on receipt at the Histopathology Laboratory. (Graph 2)

## Results

### Preservation of Tissue

- On Histopathological examination of Haematoxylin and Eosin stained sections the tissue architecture was well preserved. Both nuclear chromatin and nucleoli were crisp and well defined, connective tissue elements clearly defined.
- All specimens were received intact, properly labelled and with all documentation.

### Temperature Control

- The refrigeration unit in theatre maintained a constant 4°C.
- Eskey prior to Trial: 22°C
- Eskey with ice packs in bubble wrap: 15 – 18°C
- Eskey with ice packs above on wire rack: 10-15°C
- Eskey with ice packs above and below, separated by wire racks: 6-10°C (Manufacturer recommends 3 hour maximum transport time with 4°C cold packs, and use of mobile fridge for >3 hours)

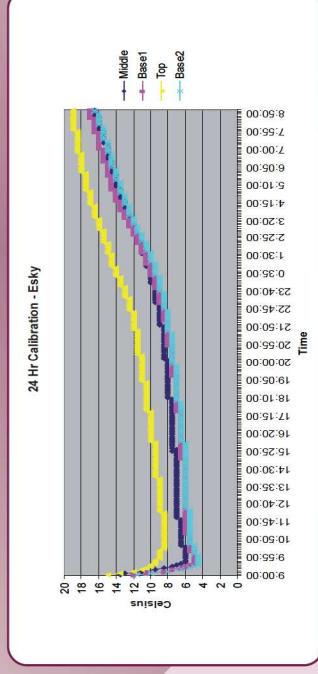
### Process Changes

- Refrigeration of specimens is done at all holding points in the process.
- Specimens are sent from theatre to pathology more regularly.

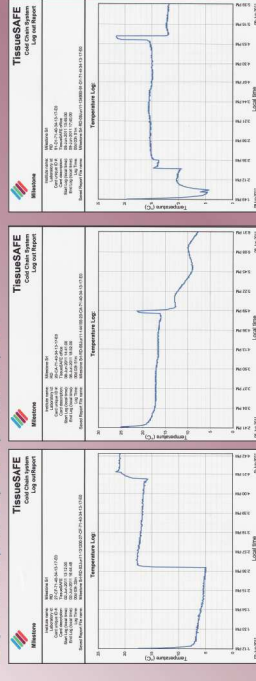
### Client Survey

- 75% users found the TissueSAFE easy to use.
- 50% users agreed it made their work safer, whilst 40% were undecided.
- All users coped with the minor changes to their work routine.

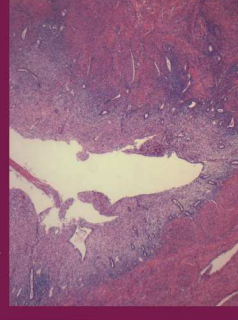
Graph 1: Calibration Chart Eskey 24 Hour



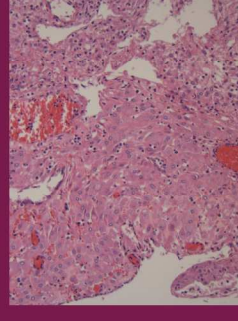
Graph 2: Transport esky - Sample RFID Reports



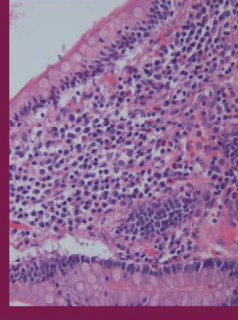
### Endomyometrium



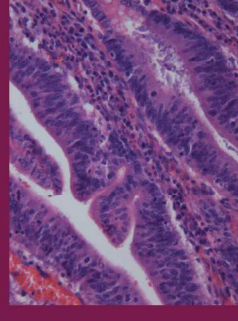
### Pseudocarcinomatous changes in uterus



### Ileum



### Colonic cancer



## Conclusions

- Whilst 4°C was not maintained during transfer between laboratories the preservation of the tissue provided excellent histological detail.
- Implementation of vacuum sealed bags for specimen transport can be successfully used within our laboratory group.
- Feedback from surveyed Operating Theatre staff was that the TissueSAFE significantly reduced their exposure to Formaldehyde.

## Acknowledgements

Operating Theatre Staff Caboolture Hospital  
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HD Scientific the Milestone Srl Employees