Preventing Contamination of Wine (in Flexible Containers)- Part 2

Presentation by Laura West

Performance BIB Meeting in La Rochelle, France

27 November 2006

Chemical Barrier

- Insufficient chemical barrier properties of polymer materials is a general packaging problem
  - soft drinks
  - water
  - dairy products
  - fruit and vegetables
  - crackers
  - etc.

Where to begin

- Polymer material producers should have an interest in developing effective barriers
- Bag and tank manufacturers must maintain the characteristics while processing
- Bags and tanks should be used before degradation of materials
- Material properties should be stable irrespective of use (which they are not today)

Verification of chemical barrier

- An appropriate test needs to be
  - Representative
    - test materials
    - conditions
    - contaminants
    - simulants
  - Standardised - agreed by the industry
  - Independent - not performed by the flexi-bag producers

Changing legislative criteria must constantly be observed

What if chemical barrier isn't absolute?

The fact is that no polymer barrier is absolute.

Therefore the materials must be monitored for their performance and the food stuff for its quality

Furthermore:

- An acceptable and defensible limit for level of contamination needs to be established
- Limit may be defined on the basis of
  a) toxicology
  b) sensory detection

Barrier test

- Would it be possible to develop a test of the barrier properties - using a laboratory chamber and working with the following parameters:
  - smallest strongly aromatic compound – e.g. benzene or ethene/ethane in defined gas or fluid concentration
  - standardised temperature
  - standardised relative humidity

?

Establishing contaminant toxicology thresholds

- If no specific legal limit exists for a contaminant in wine, the legal limit is zero (present detection limit is approx. 1 ug/l)
- If required, an independent body can define a limit. This will be based on
  - TDI (tolerable daily intake)
  - Relationship with previous studies
  - Toxicity data
  - Flavour thresholds

- provided such data is available

Preserving Sensory Characteristics

Toxicity limit:

- Definite limit which must not be exceeded
- Once exceeded, the contamination is irretrievable and the produce no longer legally suitable for consumption

Sensory limit:

- Reparable **if not exceeding toxicity limit**
- Blending into other batches a legitimate action

Risks To The Wine Industry

- Negative press coverage
- Product recall
- Invalidation of hygiene accreditation – HACCP, BRC, IFS and others

Establishing limits in the future

- V&S has had a toxicology limit established for Naphthalene in wine
- No limit has been set for any BTEX-compound
- Establishing a limit costs approx. 10.000 €

- Sensory limit for naphthalene has in two cases at V&S proved to be 1-1,5 ug/l in white wines

  GC-MS limit 1 ug/l

Proposal to Performance BiB members

- To erect a pool to finance future studies on contaminants
- Advantages:
  - Immediate action possible, as soon as contaminant is defined
  - Share of costs of 10.000 €/limit established
  - Consistency of thresholds (at least among members of Performance BiB)