Guidance Document

Alkaline Phosphatase Testing

17 January 2019

1 Background

Dairy manufacturers have an obligation under their risk management programme (RMP) to ensure that dairy heat treatments designated as a critical control point (CCP) are applied as documented in the RMP heat treatment plan. In addition, the critical limit(s) associated with a heat treatment CCP must be monitored in real time to confirm that the CCP is being applied correctly and that the treated dairy material is, and remains, fit for purpose. RMP operators must also periodically verify the ongoing effectiveness of the controls in place.

DPC 3: Animal Products (Dairy): Approved Criteria for the Manufacturing of Dairy Material and Product sets a specific monitoring expectation for pasteurised products that are released for sale before results of microbiological tests are available. This requirement is set out in DPC3 Table A4.2: *Criteria for the Operation of Dairy Heat Treatments* under 'Protection from Contamination' as follows:

(1) Operating, Maintenance Criteria: The heat treatment is operated to ensure:

a) **no untreated or partially treated dairy material passes forward**;
b) **treated dairy material is not contaminated by untreated or partially treated dairy material**; and
c) the safety and wholesomeness of treated dairy material is not compromised by contamination from services, e.g. coolants, heating media and/or cleaning solutions.

(2) Monitoring Criteria

For pasteurised products released for sale before results of microbiological tests are available, undertake phosphatase testing of the heat treated dairy material immediately after heat treatment using a NZFSA-registered test method to demonstrate the dairy material has been correctly pasteurised and not recontaminated.

This requirement to undertake alkaline phosphatase (phosphatase) testing was originally introduced under the Dairy Industry Act (revoked 2005) and reflected standard industry practice. Since that time the interpretation of monitoring and operator verification of pasteurisation as a CCP has evolved. The focus for CCP monitoring of automated heat treatment processes typically includes continuous capture of trend data to show that the critical limit parameters are being met. However, smaller processors using less sophisticated equipment will not have the same options available.

2 Revised expectations

MPI has developed an alternative approach which allows RMP operators who release pasteurised products before results of microbiological tests are available to apply phosphatase testing as a quality control test.

3 What are the phosphatase testing options?

(1) Status Quo

RMP operators may elect to continue to have phosphatase testing undertaken in a laboratory that is recognised by MPI and uses a phosphatase test method that is under its ISO 17025 accreditation - refer to http://www.ianz.govt.nz/directory/.

(2) Apply phosphatase testing as a **quality control test**

Under this option phosphatase testing is applied as an operator specified quality control test to support operator verification, but does not replace CCP monitoring or routine microbiological testing.

Product may be released provided that:

a) the operator records and retains processing data captured in real time that confirm pasteurisation conditions have been achieved for example, filter size, time, temperatures and, for continuous flow heat treatments, flow rates and divert data;
b) the operator uses one of the phosphatase methods specified in Table 1;
c) the person undertaking the test has been adequately trained, with a record of the training held and the competency confirmed by a suitably trained person who has experience in undertaking the test concerned (note: this may be the equipment supplier); and
d) routine microbiological testing of the heat treated dairy material continues to be undertaken.

4 Amendment to the RMP

Where an amendment to the RMP is required, this will be deemed to be a minor amendment when the RMP applies phosphatase testing in accordance with this Guidance Document.

If an RMP amendment is made that varies from the status quo and the criteria set out above then the amendment is most likely significant and will require evaluation followed by registration with MPI.

Table 1: Alkaline phosphatase operator specified quality control test methods

Methods	Type of Pasteurised Dairy Product
NZTM 3.11.13: Phosphatase using the Charm Paslite test Issue 16.0:November 2009	• milk, cream, flavoured milk & cheese **Not applicable to UHT dairy products.**
ISO 22160 / IDF 209:2007	• milk, cream, flavoured milk & cheese **Not applicable to UHT dairy products.**
Fast Alkaline Phosphatase (Charm Sciences)	• Liquid dairy products
NZTM 3.11.8; Issue 18.03: November 2011	• All dairy products
AOAC Official Method 965-26: Phosphatase (Residual in milk)	• All dairy products
RBM2 S23 Phosphatase by Charm Paslite for liquid milks and cream	• Liquid dairy products

Contact for further information

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