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| **Title** | **Describe and analyse data to optimise clean-in-place performance in a primary products food processing operation** | | |
| **Level** | **5** | **Credits** | **5** |

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| **Purpose** | People credited with this unit standard are able to: describe the properties of cleaning agents and chemical sanitisers used in clean in place (CIP) systems, CIP cleaning and sanitising methods, performance monitoring of CIP systems; and analyse and apply data to optimise performance of a CIP system, in a primary products food processing operation. |

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| **Classification** | Primary Products Food Processing > Primary Products Food Processing - Core Skills |

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| **Available grade** | Achieved |

**Guidance Information**

1 Legislation and references relevant to this unit standard may include but are not limited to:
- Hazardous Substances and New Organisms Act 1996;
- Health and Safety at Work Act 2015;
- Health and Safety in Employment Regulations 1995;
- Resource Management Act 1991;

and any subsequent amendments.

2 Definitions
*Clean-in-place (CIP)* – systems where cleaning solutions are circulated through plant and pipework for cleaning and sanitising purposes.
*Organisational requirements* – instructions to staff on policies and procedures which are documented in memo, electronic or manual format and are available in the workplace.
*Primary products food processing operation* – covers a meat, dairy, seafood, fruit and vegetable and honey processing, food and beverage manufacturing, and other related industries.

3 Evidence for the practical components of this unit standard must be supplied from the workplace.

4 All evidence presented in this unit standard must be in accordance with organisational requirements.

## Outcomes and performance criteria

### Outcome 1

Describe the properties of cleaning agents and chemical sanitisers used in CIP systems in a primary products food processing operation.

Range cleaning agents include but are not limited to – water, surfactants, sequestrants, chelants, acids, alkalis, enzymes, acid replacers;
sanitising agents include but are not limited to – peracetic acid compounds, oxidising agents, amphoteric surfactants, glutaraldehydes, peroxides.

### Performance criteria

1.1 Describe cleaning agents in terms of the properties of their active ingredients and their general uses.

1.2 Describe cleaning agents in terms of their mode of cleaning action.

Range cleaning action includes but is not limited to – dissolution, saponification, ionisation, suspension.

1.3 Describe cleaning agents and sanitizers in terms of factors that influence their effectiveness.

Range factors include but are not limited to – pH, temperature, concentration, time.

1.4 Describe cleaning agents and sanitizers in terms of their suitability for cleaning equipment involved in various processes.

1.5 Describe the properties of sanitising agents in terms of their functional chemical groups and mode of action.

### Outcome 2

Describe CIP cleaning and sanitising methods used in a primary product food processing operation.

### Performance criteria

2.1 Describe CIP cleaning methods in terms of their suitability for equipment and associated soil type.

Range methods include but are not limited to – combinations of acid and/or caustic replacers, concentration, sequence, timing, flushing, rinsing;
evidence of four is required.

2.2 Describe CIP sanitising methods and agents in terms of suitability for equipment type.

Range methods include but are not limited to – applicator, contact time; evidence of two is required.

**Outcome 3**

Describe performance monitoring of CIP systems used in a primary products food processing operation.

**Performance criteria**

3.1 Describe manual monitoring of CIP systems in terms of methods used and their effectiveness.

Range manual monitoring includes but is not limited to – visual monitoring of cleaning, inspection of plant and cleaning and rinse solutions, chemical titration, rinse water sediment testing;
evidence of two is required.

3.2 Describe bacteriological assessment of CIP systems in terms of factors influencing effectiveness of monitoring trends and pinpointing trouble spots.

**Outcome 4**

Analyse and apply data to optimise performance of a CIP system in a primary products food processing operation.

**Performance criteria**

4.1 Analyse CIP data to identify problems in a CIP system.

Range data includes but is not limited to – flow chart, CIP monitoring data, trace-back procedure, product analyses, product grades, microbiological results;
evidence of four is required.

4.2 Analyse and apply CIP data to optimise performance of the CIP system in terms of time, cost, product safety, and environmental impact.

Range data includes but is not limited to – chemical usage, downtime, energy use, water use, waste discharge;
evidence of four is required.

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| **Replacement information** | This unit standard replaced unit standard 21126. |

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| **Planned review date** | 31 December 2026 |

**Last date for assessment for superseded versions**

| Process | Version | Date | Last Date for Assessment |
|---|---|---|---|
| Registration | 1 | 17 September 2015 | 31 December 2024 |
| Review | 2 | 24 March 2022 | N/A |

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| **Consent and Moderation Requirements (CMR) reference** | 0033 |

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

**Comments on this unit standard**

Please contact the Hanga-Aro-Rau Manufacturing, Engineering, and Logistics Workforce Development Council qualifications@hangaarorau.nz if you wish to suggest changes to the content of this unit standard.