Farm Data Standards

# Health and Safety

Data Dictionary Version 1.1

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# Acknowledgements

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# 1 Document Management

## *1.1 Referenced Documents*

European Petroleum Survey Group (EPSG) parameter registry guide - http://www.iogp.org/pubs/373-07-3.pdf

D2.9.111.5 INSPIRE[1] - Data Specification on Human Health and Safety – Technical Guidelines

D2.8.III.9 INSPIRE - Data Specification on Agricultural and Aquaculture Facilities – Technical Guidelines

Worksafe NZ - Safer Farms

Safer Farms - Accident, Incident, or Near Miss report template

Environmental Protection Authority (EPA) – HSNO[2] Classification Codes

Wolfert, S and Allen, J. Farming for the future: Towards better information-based decision-making and communication. 2011. A Report for the Centre of Excellence in Farm Business Management pp 27.

## *1.2 Related Documents*

Related standards documents on the Farm Data Standards website include:

- Farm Features and Attributes

## *1.3 Latest Revisions*

The users of this standard should ensure that their copies of the above-mentioned documents are the latest revisions. The latest version of this Standard will always be published at www.farmdatastandards.org.nz.

## *1.4 Review of Standards*

Suggestions for improvement of this document will be welcomed. Submit your comments using the feedback mechanisms at www.farmdatastandards.org.nz.

[1] Infrastructure for Spatial Information in Europe
[2] Hazardous Substances and New Organisms Act

# 2 Introduction

## *2.1 Overview*

Pastoral farming is a data rich activity. Most biophysical processes from soil nutrient management to cow performance have both paper based and more organised data bases recording status, productivity and intentions. There are a significant number of tools covering livestock, nutrition and financial management[1]. Most of these require the user to re-enter data from other sources and they overlap in functionality. It is probable that if data had been more accessible their design would have better focussed on the service they undertook to provide. Farmers will benefit from a highly innovative technology sector that delivers applications that are simple to use and access, which source the information they need without impedance and deliver value.

This document is part of a work stream focusing on Data Standards for interchanging health and safety information. Development of this Data Standard began with a workshop of interested parties in February 2016, followed by consultation with a wider group.

## *2.2 Outcome Statement*

Broad adoption of a common vocabulary and data dictionary for exchange of farm information will result in farmers and other industry parties entering data only once and having that data readily accessible for populating multiple decision-making systems. As a result, industry and individual farm businesses will be better placed to undertake systems analysis to inform management practice. More accurate and structured interchange of farm data will also support industry performance objectives and other information system targets.

## *2.3 Scope and Application*

This standard relates to the management of Health and Safety on farm.

The standard addresses:

- Hazards and Risks
- People and Roles
- Events

[1] Wolfert, S and Allen, J. Farming for the future: Towards better information-based decision-making and communication. 2011. A Report for the Centre of Excellence in Farm Business Management pp 27.

## 2.4 Interpretation

For the purposes of this standard, the word 'SHALL' refers to requirements that are essential for compliance with the standard, while the word 'SHOULD' refers to practices that are advised or recommended. The term MAY is used to distinguish a permissible or optional practice.

The terms 'Normative' and 'Informative' have been used in this standard to define the application of the Appendix to which they apply. A 'Normative' Appendix is an integral part of a standard while an 'Informative' Appendix is only for information and guidance.

## 2.5 Definitions and Abbreviations

For the purposes of this standard, the following definitions shall apply:

| Term | Definition |
|---|---|
| ISO Date | ISO 8601 date format: YYYY-MM-DD |
| PCBU | Person Conducting a Business or Undertaking |
| PICA | Person in Charge of Animals |
| OEM | Original Equipment Manufacturer |
| HSNO | Hazardous Substances and New Organisms Act |

## 2.6 Spatial Attributes

Location is a key piece of information for health and safety management. Location points and physical features (e.g. first aid points and fuel storage dumps) can be described by a set of geographic information. **When transferring data about physical features, geographic coordinates and geographic shape SHOULD be interchanged with that data.**

The Farm Features and Attributes Data Standard defines attributes for farm features which have a spatial representation. Some of the attributes described in that Data Standard may be useful in a Health and Safety management context, for example the recording of information about spatial features which may also present as a hazard risk.

| Attributes or Fields | Data Types and Notes |
|---|---|
| Geographic Coordinates | Coordinates representing a location, using latitude and longitude, or a recognised coordinate system identified using the European Petroleum Survey Group (EPSG) parameter registry guide. |
| Geographic Shape | OGC Web Feature Service URL or string of embedded feature, using a recognised coordinate system identified using the European Petroleum Survey Group (EPSG) parameter registry guide. |
| Feature Identifier | String: Identifier used to identify the feature |
| Feature Name | String: Name used to identify the feature |
| validFrom | ISO Date : Date at which this spatial data object begins |
| validThrough | ISO Date: Date at which this spatial data object ends |

## *2.7 Location Identification*

Distinct identification of property locations will be useful in health and safety recording for general reference, and contexts such as the affected locations of a natural event. A number of identifiers are accepted for property identification in New Zealand:

- Ministry of Primary Industry FarmsOnLine identifier;
- NAIT Location identifier (one or more FarmsOnLine identifiers registered with NAIT)
- AgriBase farm_id (based on a coordinate pair in lat/long, NZTM or NZMG coordinates)
- EPCglobal Serialised Global Location Number[5] (as used by the NZ Business Number system); and
- Herd Testing Location identifier using the NZMS1 (1939 to 1975) map grid reference.

The identification of property locations is further defined in the Farm & Model Data Standards, and is therefore not included in the Health and Safety Standard. The Farm & Model Standard includes features, data types and definitions for location data, and so any location data must be shared according to that standard.

For historic reasons it will be necessary to support the interchange of data utilising all of these mechanisms. This standard therefore requires that location identifiers SHALL be prefixed with a URN namespace identifier.

**Acceptable URN namespaces for use in New Zealand location identifiers shall be:**

- **urn:epc:id:sgln or**
- **a nzl:pri: registered location namespace.**

**For specific interchanges agreed between parties, the parties may agree to exchange identifiers within a single namespace only, and dispense with the namespace prefix.**

# 3 Hazard Data Dictionary

## *3.1 Hazard Identification*

A Hazard Name SHALL be recorded if the hazard is not already recorded as a Feature with spatial attributes as defined in Section 2.6. If the Hazard already exists as a Feature, then Hazard Name MAY be ignored for that Feature.

| Category | Attributes / Codes | Data Types and Notes |
|---|---|---|
| Hazard Identification | Feature Identifier | String: Identifier used to identify the feature |
| | Feature Name | String: Name used to identify the feature |
| | Hazard Name | String: Name or identifier of the hazard. (NOT required if Feature ID and/or Feature Name are used to identify the Hazard) |
| | Hazard Type | Enumeration: Activity, AgriBuilding/Installation, Biological, Climatic/Natural, Environmental, Equipment, Hazardous Substance, Vehicle |
| | Hazard Location | String: Description of location of the hazard (NOT required if geographic coordinates are used to identify the Hazard) |
| | Hazard Description | String: Describe the hazard |
| | Hazard From | ISO Date. All Hazards MUST have a Hazard From Date |
| | Hazard To | ISO Date. Temporal Hazards MAY have a Hazard To date which defines when the feature is no longer deemed to be hazardous. |
| | Hazardous Period | String: describes a temporal period in which this hazard exists: e.g. it may be seasonal, or exist only at certain times of the day |
| | Hazard Exposure Consequence | Describes the result of contact with or exposure to the hazard. Enumeration: Minimal, Low, Serious, Very Serious, Catastrophic |
| | Potential Harm | String: Description of the potential harm the hazard poses and what/whom it may affect, e.g. Burn risk. |
| Hazard Control | Hazard Management | Enumeration: Eliminate, Minimize |
| | Training Required | String: Description of the training required for staff / visitors to mitigate risk |
| | PPE Required | String: Description of the Personal Protection Equipment required to mitigate risk |

| | | |
|---|---|---|
| | Process Control | String: Description of the process to be followed to mitigate risk |
| | Other Control | String: Description of the controls or actions in place to mitigate risk. |

## *3.2 Hazard Types – Additional Attributes*

Some hazard types typically have a range of additional attributes beyond those captured in the Hazard Identification (Section 3.1).

| Hazard Type | Definition | Attributes / Codes | Data Types and Notes |
|---|---|---|---|
| Hazardous Substances Location | Any hazardous substances within the HSNO classification. | Storage Type | Enumeration: Shed, Tank, Drum, Container, Silo, Bin, Other |
| | | Quantity | Float: Expressed in kg's. |
| | | Class | Enumeration: Class code, e.g. 3.1A. (See EPA HSNO Hazardous Goods Classification codes for complete list). |
| | | Location Test Certificate | String |
| | | Location Test Certificate Date | |
| | | Stationary Container System Test Certificate | String |
| | | Stationary Test Certificate Date | ISO Date |
| | | Person in Charge | String: Person ID |
| | | Approved Handler | String: Person ID |
| | | Approved Handler Job Title | String: |
| | | Approved Handler Contact Details | String: |
| | | Other Environment Hazard | String: Description of other environmental hazard type. |
| AgriBuilding/Installation | Terms used to describe farm structures and activity facilities by INSPIRE and adopted by the Farm Features and Attributes Data Standard. D2.8.III.9 INSPIRE Data Specification on Agricultural and Aquaculture Facilities – Technical Guidelines | AgriBuilding Type | Refer Appendix C.1 Farm Features and Attributes |

# 4 People Data Dictionary

This section allows for people to be assigned specific roles in relation to health and safety, and for events to be linked to people. For example, a Contractor is a visitor to the farm and may also be a 'person conducting a business or undertaking' (PCBU) and each role carries a particular responsibility for health and safety on the farm. Those people may be associated with events, for example an induction briefing**. It is recommended that people SHOULD be recorded with a unique identifier to allow for the linking of other relevant data to those people.**

Many of the items in this table are based upon definitions at http://schema.org, which is an output of the W3C Semantic Web group, and is used by Google and Microsoft. Alternatives schemas can be found in the work of OASIS/UBL (www.oasis-open.org and http://ubl.xml.org) and UN/EDIFACT (www.unece.org/cefact/edifact). INFORMATIVE examples of person attributes can also be found in Appendix A, referencing schema.org/Employee Role attributes.

## *4.1 Person Identification*

| Feature | Attributes or Fields | Data Types and Notes |
|---|---|---|
| Person Identification | Person ID | String: Unique identifier for person or group |
| | Person Type | Enumeration: Owner, Permanent Staff, Casual Staff, Contractor, Farm Visitor, Recreation Visitor |
| | Person Roles | Enumeration: First Aid, Safety Rep, Fire Warden, PICA, PCBU |
| | Honorific Prefix | Enumeration: Miss, Ms, Mr, Sir, Mrs, Dr, Lady, Lord |
| | Name | String: Full Name |
| | Given Names | String: Typically the first name(s) of a person |
| | Family Name | String: Typically the last name of a person |
| | Telephone | String: An international format or country-specific format telephone number |
| | Mobile Number | String: An international format or country-specific format mobile telephone number |

| Feature | Attributes or Fields | Data Types and Notes |
|---|---|---|
| | Postal Address | Postal Address specified using http://schema.org/postalAddress or as a formatted address string in the local format of the relevant country. |
| | Work Location | Physical Address specified using http://schema.org/postalAddress or as a formatted address string in the local format of the relevant country. |

## *4.2 Person Attributes*

| Feature | Attributes or Fields | Data Types and Notes |
|---|---|---|
| Staff Attributes (for Owner, Permanent and Casual Staff) | Farm role | One or more of the roles in this enumeration: Property Owner, Lessee, Sharemilker, Farm Manager, Contract Milker, General Hand, Shepherd, Head Shepherd, Stock Manager, Herd Manager, Operations Manager, Tractor/Machinery Driver, Contact Person, Advisor, Partner, Accountant, First Aid, Safety Rep, Fire Warden, PICA, PCBU |
| | Staff From | ISO Date. All Staff MUST have a Staff From Date ISO8601 Date Time |
| | Staff Through | ISO Date. Staff MAY have a Staff Through date which defines the last date on which the person is deemed to be a staff member.ISO8601 Date Time |
| | Paid | Boolean: Used to distinguish employees from owner-operators/family |
| | Weeks worked in year | Integer: Used to distinguish seasonal workers |
| | WorkHours | Integer: Used to distinguish part-time workers |
| | Visit Reason | String: Description of farm visit reason. |
| Visitor and Contractor Attributes | Time of Arrival | ISO 8601 Date Time |
| | Time of Departure | ISO 8601 Date Time |
| | Number of Visitors | Integer: Used if two or more people visit for the same purpose at the same time |
| | Organisation Name | String: Organisation Name |

# 5 Event Data Dictionary

An Event is used to describe a range of activities associated with the management of health and safety on farm. These events may be linked to people, locations, and features for which information is already recorded and is relevant to the event information. Note that the Notifiable event type is distinct from the Accident, Incident, or Near Miss Event in that the latter is for farm management purposes with no associated legal requirements or definitions. **It is recommended that events SHOULD be recorded with a unique identifier to allow for the linking of events with other relevant farm data.**

## *5.1 Event Identification*

| Category | Attributes | Data Type and Notes |
|---|---|---|
| Event identification | Event Id | String: Unique identifier for the event. |
| | Event Name | String: Name of the event. |
| | Event Type | Enumeration: Audit/Review, Environmental, Maintenance, Inspection, Notifiable Event, 'Accident, Incident or Near Miss, Training, Meeting, Report, |
| | Event Date Time | ISO 8601 Date Time |
| | Event Location | URN Location Identifier(Section 3.1 Animal Data Standard) |
| | Event Description | String: Description of the event. |

## *5.2 Event Attributes*

| Event Type | Attributes | Data Type and Notes |
|---|---|---|
| Maintenance Event | Feature ID | String: Identifier used to identify the feature. Refer Farm Features and Attributes Data Standard |
| | Feature Name | String: Name used to identify the feature. Refer Farm Features and Attributes Data Standard |
| | Asset Name | String: Name of the Asset (NOT required if Feature ID and/or Feature Name are used to identify the Asset) |
| | Maintenance Due | ISO Date – Maintenance Due Date |
| | Maintenance Organisation Name | String: |

| | | |
|---|---|---|
| Inspection Event | Inspection Due | ISO Date – Maintenance Due Date |
| | Inspection Organisation Name | String: |
| Audit/Review | Review Organisation Name | String: |
| | Review Person | String: Person ID or Name |
| | Review Note | String: |
| Training | Trainee | String: Person ID or Name |
| | Training Provider | String: Person ID, Person Name or Organisation |
| | Competent | Boolean: Describes if person is deemed competent in relevant activity after training |
| | Qualification Awarded | String: Name of Qualification Awarded |
| Meeting | Attendees | String Person IDs or Names in attendance |

## *5.3 Accident, Incident or Near Miss Event*

These data fields relate to reports entered by a farmer as part of good health and safety management. They do not represent the information required of a legally Notifiable Event. See the SaferFarms Accident, Incident, or Near Miss report template for reference.

| Feature | Attributes or Fields | Data Types and Notes |
|---|---|---|
| Event Details | Person ID | String: |
| | Person Name | String: |
| | Person Type | String: |
| | Time of Accident | ISO 8601 Date Time |
| | Date Reported | ISO 8601 Date |
| | Hours at Work | Integer: (Number of hours worked prior to accident / near miss). |
| | Accident Location | String: |
| | Accident Severity | Enumeration: Near Miss, No Treatment, First Aid, Medical Treatment, Notifiable Event |

| Feature | Attributes or Fields | Data Types and Notes |
|---|---|---|
| Accident Description | Injury Type | Enumeration: Strain/Sprain, Cut, Head Injury, Fracture/Break, Gradual Process, Bruising, Burns, Poison/Chemical, Multiple Injuries, No Injury |
| | Trained for Activity | Boolean: Is the person trained for task being performed. |
| | Vehicle Involved | Boolean |
| | Vehicle Type | String: Description of vehicle involved in accident. |
| | Hazard Present | Boolean |
| | Hazard Type | Enumeration: See Section 3.2 |
| | Medical Needs Assessment | String: Eg Able to continue full duties, Unable to work, Able to do light duties, Help available at home, Assistance required at home, Transport assistance needed. |
| Preventative Action | Action Required | String: Description of any preventative actions required |

# 6 Appendix A – Additional Person Attributes

This is an INFORMATIVE list of person attributes that may be use as referenced from the schema.org/EmployeeRole attributes.

| Attribute | Data Type and Npotes |
|---|---|
| baseSalary | Float: The base salary of the job or of an employee in an EmployeeRole. |
| salaryCurrency | String: The currency (coded using ISO 4217 ) used for the main salary information in this job posting or for this employee. |
| numberedPosition | Integer: A number associated with a role in an organization. |
| startDate | ISO Date: The start date and time of the item (in ISO 8601 date format). |
| endDate | ISO Date: The end date and time of the item (in ISO 8601 date format). |

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