OPERATIONAL PROCEDURE

FUMIGATING WITH METHYL BROMIDE UNDER A CERTIFICATION ASSURANCE ARRANGEMENT

Procedure Number: ICA-04

ISSUE: DRAFT

REVISION REGISTER

Revision No.	Date of Issue	Amendment Details
0	10/08/96	All pages
1	22/08/96	Pages 1, 3, and 4
2	30/08/96	All pages
3	05/09/96	All Pages
4	09/09/96	All Pages

Controlled Copy No: [ ]

Controlled: ☐

Authorised : ..... Schedule 4 - CTPI ..... **Uncontrolled:** ☑

Manager (Plant Health Regulation)

Uncontrolled copies of this document are not subject to amendment or revision. Holders of uncontrolled copies should contact the Papaya Fruit Fly Task Force to obtain a current version of this document.

1. PURPOSE

The purpose of this procedure is to describe-

(a) the principles of operation, design features, and standards required for fumigation facilities; and

(b) the responsibilities and actions of personnel;

that apply to the certification of fumigation of fruit with methyl bromide for fruit fly for movement from a Papaya Fruit Fly Pest Quarantine Area under a Certification Assurance (CA) arrangement.

2. SCOPE

This procedure covers all certification of methyl bromide fumigation ~~of fruit~~ by a Business operating under a Certification Assurance arrangement within a Papaya Fruit Fly Pest Quarantine Area.

Fumigation with methyl bromide may be used for all fruits however it should be noted that avocados, bananas, oranges, lemons, tomatoes, apples, and lychees may be adversely affected.

This procedure does not abrogate the responsibility of licensed fumigators to comply with the legislative requirements as prescribed in the *Health (Poisons-Fumigation) Regulations 1973* and *Work Place Health and Safety Act 1995*.

3. REFERENCES

AQIS	*Standard for Fumigation with Methyl Bromide (Version 2.0, December 1994)* Australian Quarantine and Inspection Service, DPI &E
Bond, E.J.	*Manual of Fumigation for Insect Control (1984)* FAO Plant Production and Protection Paper 54
Gellatley, J.G., Rigney, C.J., Rippon, L.E. and Seberry, J.A.	*Fumigation of Fresh Fruit and Vegetables (1978)* Fresh Fruit Disinfestation Sub-Committee, Commonwealth Department of Primary Industries
Infosafe No: NU01R	*Material Safety Data Sheet - Product: Methyl Bromide 980 Fumigant (Issued Nufarm 26/02/92)* NUFARM Ltd.
Permit No. OPM0150K	*Off-Label Use of a Registered Agricultural Chemical* (Effective from 22 November 1995) National Registration Authority
Queensland Government	*Health (Poisons-Fumigation) Regulation 1973*

WI-02	*Guidelines for Completion of Assurance Certificates for Fruit Treated by a Business Operating Under a CA Arrangement*
WI-06	*Guidelines for Testing Fumigation Chambers*

4. DEFINITIONS

Act	means the *Plant Protection Act 1989*.
Application for Accreditation	means an *Application for Accreditation of a Business for a Plant Health Certification Assurance (CA) Arrangement* (FDU 385).
Assurance Certificate	means a *Plant Health Assurance Certificate* (FDU 384).
Authorised Signatory	means an officer of a CA accredited Business whose name and signature is provided as an authorised signatory with the Business's *Application for Accreditation.*
Banana fruit fly	means all stages of the species *Bactrocera musae.*
Business	means the legal entity responsible for the operation of the fumigation facility and Certification Assurance arrangement detailed on the Business's *Application for Accreditation.*
CA	means Certification Assurance.
Certification Assurance	means a voluntary arrangement between the Department of Primary Industries and a Business that demonstrates effective in-house quality management and provides assurance through documented procedures and records that produce meets specified requirements.
certified/certification	means covered by a valid *Plant Health Assurance Certificate* (FDU 384) issued by a Business operating under a CA arrangement for fumigation with methyl bromide.
chamber	means a permanent or semi-permanent enclosure made from gas-proof material specifically designed for the purpose of fumigation
fumigant	means 1000g/kg methyl bromide (CH_3Br)
fumigation	means the treatment of fruit with a fumigant.
fumigator	means a person licensed to undertake fumigation pursuant to the *Health (Poisons-Fumigation) Regulations 1973.*
fruit	means produce that consists of the ripened ovary of the flower (and in most instances enclosing seeds except certain species where cultivated varieties have been bred to be seedless such as bananas and strawberries where the seeds are external) of all species of plants except non-host fruit species.
fruit fly	means Papaya fruit fly, Queensland fruit fly and Banana fruit fly.

Inspector	means an inspector appointed under *the Plant Protection Act 1989* and an authorised person exercising any or all of the powers with which the person has been authorised under Section 6(1).~~means an inspector appointed under the Act or an authorised person exercising any or all of the powers with which the person has been authorised under Section 6(1) of the Act.~~
Papaya fruit fly	means all stages of the species *Bactrocera papayae.*
Papaya Fruit Fly Pest Quarantine Area	means a quarantine area declared under Section 11 of the *Plant Protection Act 1989* for Papaya fruit fly.
Suspension Area	means within 50 km from the site of a confirmed outbreak of Papaya fruit fly, or within 30 km from a confirmed outbreak of 1.2 km or less in diameter.

5. RESPONSIBILITY

These position titles have been used to reflect the responsibilities of staff under the CA arrangement. These positions may not be present in all Businesses, or different titles may be used for staff who carry out these responsibilities. In some Businesses one person may carry out the responsibilities of more than one position.

The **Certification Controller** is responsible for-

- ensuring the fumigation facility has been approved or deemed an as of right use by the Local Authority (as applicable);
- ensuring the fumigation facility is covered by a valid certificate of test issued by a licensed fumigator;
- ensuring the fumigation facility is tested by a licensed fumigator at least every six months during the facility's operation;
- ensuring thermometers used for measuring fruit flesh temperatures are identifiable and calibrated at least weekly;
- ensuring that where scales are used to measure fumigant that these are calibrated;
- ensuring all fumigations are performed by a licensed Fumigator.
- ensuring the Business has current accreditation for a Certification Assurance arrangement covering fumigati~~n~~gon with methyl bromide~~flood spraying with dimethoate or fenthion~~ for fruit fly;
- training staff in their duties and responsibilities under this Operational Procedure;
- ensuring the Business and its staff comply with their responsibilities under this Operational Procedure;
- ensuring that all fumigation ~~dimethoate or fenthion flood spraying~~ of fruit certified under the Business's CA arrangement is carried out in accordance with this Operational Procedure.

The **Fumigator** is responsible for -

- ensuring fumigations are conducted in accordance with this procedure;
- recording and maintaining treatment records in accordance with this procedure;
- determining the chamber volume;

- determining the minimum fruit temperature for each fumigation;
- determining the fumigant dosage rate;
- maintaining thermometer identification and calibration records;
- maintaining scale calibration records (if applicable).

The **Authorised Dispatcher** is responsible for -

- ensuring all treated fruit is protected against reinfestation by fruit fly after treatment in accordance with 7.8~~10~~ Post Treatment Security;
- ensuring all packages containing certified fruit are identified in accordance with 7.10.1~~.12.1~~ Package Identification;
- ensuring an Assurance Certificate is issued for all fruit intended to be dispatched for movement from the Papaya Fruit Fly Pest Quarantine Area;
- maintaining copies of all Assurance Certificates issued by the Business under the CA arrangement.

~~The **Fumigation Facility Owner** is responsible for -~~

- ~~ensuring the fumigation facility has been approved or deemed an as of right use by the Local Authority (as applicable);~~
- ~~ensuring the fumigation facility is covered by a valid certificate of test issued by a licensed fumigator;~~
- ~~ensuring the fumigation facility is tested by a licensed fumigator at least every six months during the facility's operation;~~
- ~~ensuring thermometers used for measuring fruit pulp temperatures are identifiable and calibrated at least weekly;~~
- ~~ensuring all fumigations are performed by a licensed Fumigator.~~

6. BACKGROUND

This Operational Procedure details-

- the requirements and procedures for accreditation of a Business for a Certification Assurance arrangement for fumigation with methyl bromide for fruit fly;
- the responsibilities and procedures which must be undertaken by a Business and its staff when carrying out fumigation with methyl bromide under a CA arrangement.

Fruit prepared in approved facilities under a CA arrangement and certified in accordance with this Operational Procedure will be accepted as meeting the requirements for movement of fruit from the declared Suspension Area out of a Papaya Fruit Fly Pest Quarantine Area.

The Department of Primary Industries maintains the right to inspect at any time fruit prepared for certification under a CA arrangement, and to refuse to accept an Assurance Certificate issued by a Business operating under a CA arrangement where produce is found not to conform to specified requirements (refer 7.1 Requirements).

7. PROCEDURE

7.1 Requirement

Methyl bromide fumigation at 32gms/m^3 for two hours at a fruit temperature of 21° C or above or equivalent dosage as follows-

Methyl Bromide (g/m^3)	Flesh Temperature (degrees Celsius)	Time (hours)
24	26-31.9	2
32	21-25.9	2
40	15-20.9	2
48	10-14.9	2

Loading rates within the chamber must be not less than 30 nor more than 50 per cent of the volume of the chamber when empty.

100% methyl bromide must be used for fumigating fruit. The use of fumigants containing 98% methyl bromide and 2% chloropicrin does not have National Registration Approval for the fumigation of fruit as chloropicrin is phytotoxic and is likely to damage fruit.

7.2 Accreditation of a Business for a Certification Assurance Arrangement for Fumigating with Methyl Bromide

The Business operating a fumigation facility seeking accreditation for a Certification Assurance arrangement shall make application for accreditation by lodging an *Application for Accreditation of a Business for a Plant Health Certification Assurance (CA) Arrangement* (FDU 385) (refer Attachment 1).

Applications must be lodged at least ten working days prior to the intended date of commencement of certification of fruit under this Operational Procedure.

7.2.1 Accreditation Process

Prior to accrediting a Business for a Certification Assurance arrangement for fumigating with methyl bromide, an Inspector shall carry out an initial audit of the Business to:

(a) verify that the fumigation facility has been approved or deemed as an as of right of use by the Local Authority (as applicable) by sighting documentary evidence of same;

(b) verify that the fumigation facility is covered by valid Certificate(s) of Test, issued by a licensed fumigator within the last six months by obtaining a copy of the relevant test certificate(s);

(c) verify that the fumigation facility is a permanently constructed fumigation chamber or a semi-permanent fumigation chamber made from gas-proof material designed specifically for the purpose of fumigating fresh fruit;

(d) verify that fumigations will be undertaken by a licensed fumigator;

(e) verify that the Business maintains a current version of this Operational Procedure and a current copy of the Business's *Application for Accreditation*;

(f) verify that the business maintains suitable temperature measuring equipment in accordance with 7.4.1 Equipment;

(g) verify that the business calibrates and maintains thermometer calibration records in accordance with 7.4.3 Calibration of Thermometers;

(h) verify that the business maintains suitable scales in accordance with 7.6.3(b)if using a Loss of Weight System;

(i) verify the business calibrates and maintains scale calibration records in accordance with 7.6.3(b)

(j) verify the Business maintains the records and other documentation required under this Operational Procedure;

(k) verify the Business has the procedures and equipment in place to mark certified packages in accordance with 7.10.1~~7.12.1~~ Package Identification;

(l) verify the Business has the procedures and equipment in place to maintain treated fruit in secure conditions and prevent mixing with untreated fruit in accordance with 7.8~~10~~ Post Treatment Security;

(m) verify nominated staff have been trained and are aware of their responsibilities and duties under the Certification Assurance arrangement.

7.2.2 Certificate of Accreditation

Following successful completion of an Initial Audit, the Business receives a *Certificate of Accreditation for a ~~Business Operating a~~Plant Health Certification Assurance (CA) Arrangement* detailing the facility location and treatment for which the Business is accredited and the period of accreditation.

The Business shall maintain a copy of the current Certificate of Accreditation and shall make this available on request by an Inspector.

7.3 Calculation of Fumigation Chamber Volume

The volume of the space to be fumigated is the volume of the total space enclosed for fumigation. It is to be calculated using measuring tape or other suitable device to determine length, width and height and is to be expressed in cubic metres.

Where an enclosed chamber is used for fumigation, the volume of any gas circulation equipment external to the chamber which is not sealed from the chamber during fumigation must also be used in the calculation of the volume.

The following calculation may be used to determine the volume of the chamber in cubic metres (m^3)-

(chamber height (m) x chamber length (m) x chamber width (m)) + external ducting volume (m^3) = total chamber volume m^3

For example-

Chamber Height	=	***2.5 metres***
Chamber Length	=	***3 metres***
Chamber Width	=	***3 metres***
Chamber Volume	=	***2.5 x 3 x 3 = 22.5 m^3***

(if applicable)

External Ducting Volume	=	***0.5 m^3***
Total Chamber Volume	=	***22.5 m3 + 0.5 m3 = 23.0 m3***

~~The Inspector shall be satisfied that the chamber volume is accurately recorded.~~

Details of chamber measurements, chamber volume, and fumigant dosage rates shall be prominently displayed in the vicinity of the chamber (refer ~~Example Chamber Volume and~~7.6.2 Fumigation Dosage Chart ~~Attachment 3~~).

7.4 Calculation of Fruit temperature

Immediately prior to the commencement of a fumigation, the Fumigator shall determine the minimum flesh temperature of each load of fruit to be fumigated.

7.4.1 Equipment

Thermometers used for measuring fruit temperature may be of the glass (mercury or alcohol) or electronic type and shall be uniquely identified for calibration purposes.

7.4.2 Measurement

The Fumigator shall measure the flesh temperature of one centre ~~centre~~ fruit and one outer fruit from each pallet ~~at least every twentieth small package or two centre fruits and two outer fruits in every~~ or bulk bin.

For unpalletised produce, a minimum of one outer and one inner fruit from every twentieth package shall be sampled.

A minimum of five temperature readings shall be taken from each position for each lot of fruit to be fumigated.

7.4.3 Calibration of Thermometers

Thermometers used for measuring fruit temperature shall be calibrated at least weekly and should be accurate to within ± 0.5~~3~~° C.

Calibration may be undertaken using the ice/water slurry method or by a recognised testing authority.

The business shall maintain results of calibration checks on thermometers. Thermometer calibration records shall record the following information-

- the date of calibration;
- the identification of the thermometer calibrated;
- confirmation that the equipment is accurate to within ±0.5° C;
- the officer responsible for conducting the calibration check.

> ***Ice/water Slurry Calibration***
>
> ***A slurry mixture of ice water and shaved ice is prepared in a insulated vessel. Each thermometer is calibrated by placing in the cup and recording the indicated temperature. If the indicated temperature is outside the range 0 ± 0.5° C the thermometer is unsuitable for use under this procedure. While it may be possible to adjust electronic thermometers, inaccurate glass thermometers shall be replaced and appropriate records made.***

7.4.4 Fruit Temperature Records

The Fumigator shall record each temperature and the maximum and minimum fruit flesh temperatures of the load on the Fumigation Treatment Record (refer Attachment 4).

7.5 Preparing, Loading and Sealing the Chamber

7.5.1 Preparing the Chamber

The Fumigator shall check the chamber for damage and possible leak sites prior to the chamber being loaded.

Any damage (eg damaged door seals or tears in tent walls) shall be made good prior to loading.

The Fumigator shall check chamber circulation and ventilation systems are operating correctly and ensure all vents are closed and sealed prior to the chamber being loaded.

7.5.2 Loading the Chamber

The Fumigator shall ensure that an adequate distance is maintained between each pallet or bulk bin and the sides and top of the chamber to allow circulation of the fumigant. A 5 cm space shall be left between each pallet load or bulk bin in the chamber with a minimum space of 10 cm between the top and sides of produce to the walls and ceiling.

Fruit may be fumigated either unpacked in bulk bins or following packing.

The fumigator shall ensure that goods which are packaged or covered with impervious materials such as plastic bags or waxed paper are opened, cut or removed to allow penetration of the gas.

7.5.3 Sealing the Chamber

Once all fruit has been placed in to the chamber the fumigator shall ensure the chamber is gas tight by closing all vents and access points and checking all possible leak sites such as doors, gaskets and joints.

7.6 Fumigation

After the chamber has been sealed the Fumigator turns on all circulation fan(s) and ensures these are working correctly.

7.6.1 Calculation of Fumigant Dosage

The fumigant dosage rate is specified in 7.1 Requirements for an optimal temperature of 21° C. The dosage rate may be varied by 8g/m^3 for every 5° C change in temperature to a minimum 10° C and maximum 32° C in accordance with the Table.

Treatment must not commence if the temperature of the fruit is below 10° C or above 32° C.

The dosage rate applied to a fumigation shall be determined by the temperature of the **coldest fruit** from any lot of fruit to be fumigated within the chamber.

(a) Sealed System

Determine the amount of methyl bromide required in millilitres (mLs) using the following formula-

[chamber volume (m^3) x dosage rate (gms/m^3)] ÷ 1.73 = mLs methyl bromide

For example:

[22.5m^3 x 32gms/m^3] ÷ 1.73 = 423.5 mLs methyl bromide

where 1.73 represents the conversion factor to convert the required dose rate in grams (gms) to millilitres (mLs) of methyl bromide. Methyl bromide has a specific gravity of 1.73 at 0°C.

(b) Loss of Weight System

Determine the amount of methyl bromide required in grams (gms) using the following formula-

chamber volume x dosage rate = gms methyl bromide

For example $22.5m^3$ x $32gms/m^3$ = 720 gms methyl bromide

The Fumigator shall maintain records of the total amount of methyl bromide applied for each fumigation on the Fumigation Treatment Record (refer Attachment ~~41~~).

7.6.2 Fumigation Dosage Chart

The Business shall maintain a Fumigation Dosage Chart (refer Fumigation Dosage Chart - Attachment 3) or similar record in close proximity to the chamber for each chamber used by the Business for fumigation under this Operational Procedure.

~~The Business shall maintain a Fumigation Dosage Chart (refer Fumigation Concentration Chart - Attachment 4 & 5) or similar record in close proximity to the fumigation chamber(s).~~

~~The chart shall provide the following details-~~

The chart shall provide the following details-

(a) the Business's name and Interstate Produce (IP) number;

(b) the identification of the chamber to which the chart applies;

(c) the total chamber volume in cubic metres;

(d) the quantity of methyl bromide in millilitres (mLs) or in grams (gms) required to be added to the chamber to achieve a concentration of 24, 32, 40 and 48 g/m^3.

~~(e) the identification number of the chamber;~~

~~(e) the total volume (in cubic metres eg 2.95 m3) of the chamber;~~

~~(e) the volume in millilitres (mLs) of methyl bromide required to achieve the required concentrations (refer 7.1); or~~

~~(e) the weight in grams (gms) of methyl bromide required to achieve the required concentrations (refer 7.1);~~

(e) the printed name and signature of the licensed fumigator responsible for the preparation of the chart and the date of preparation.

7.6.3 Application of Fumigant

(a) Sealed system

The Fumigator measures out the required amount of fumigant into the measuring cylinder. After the required amount of fumigant has been decanted and checked the fumigant is introduced into the chamber.

Once all of the fumigant has been dispensed the vents are closed.

(b) Loss of Weight System

The Fumigator measures out the required amount of fumigant by the loss of weight in the dispensing cylinder.

To operate this method the dispensing cylinder is placed onto scales to allow the weight of the cylinder to be determined before application of the fumigant.

The Fumigator must tare off the weight of the required amount fumigant on the dispensing cylinder and open the valve to apply the required amount until the cylinder is at the tared weight.

Scales used for the Loss of Weight System must be calibrated using a known weight at least every six months.

Records of calibration must be maintained and include date of calibration, person responsible and result of calibration.

7.6.4 Vaporiser/Volatiliser

Although Methyl Bromide has a boiling point of 3.6° C and will vaporise when released at temperatures above 4.0° C, freezing may occur as the gas is released from the delivery cylinder. For this reason a vaporiser or volatiliser shall be used to introduce the methyl bromide as a hot gas.

A suitable device has the delivery tube of copper, coiled and submerged in hot water.

7.6.5 Placement of Gas Supply Lines

Gas supply lines shall be strategically placed within the chamber to effectively introduce and allow dispersal of the gas. As the fumigant is more than three times heavier than air the gas should be introduced near the top of the chamber directly into the airstream of the circulation fan. Adequate fan circulation provided during the fumigation (refer 7.6.6).

Precautions must be taken to avoid direct contact with the fruit as damage may occur.

7.6.6 Mixing of Fumigant

To ensure adequate mixing of the fumigant, fans should be used to disperse the gas throughout the chamber and to avoid settling of the gas during fumigation.

It is suggested that an axial fan capable of providing 60 room changes of volume per hour be used for at least 15 minutes after the introduction of the gas. Low velocity/low volume fans may be used for longer periods.

7.6.7 Testing for Leaks

Once the fumigation has commenced, the Fumigator shall test the chamber for leaks using a halide lamp. Sites checked shall include-

- doors sealing points;
- external ducting;
- exit points for supply lines.

Any leaks detected shall be repaired immediately. If leaks are detected that can not be repaired during the treatment, the fumigation must be aborted and the chamber repaired before further use.

7.7 Completion of Fumigation

7.7.1 Venting

After two hours of treatment the chamber should be ventilated to extract all of the gas remaining.

The Fumigator opens/starts the exhaust system of the chamber and runs it for not less than 30 minutes before entering the chamber. The chamber door/skirt may require opening slightly to allow drawing in of fresh air.

Do not enter the chamber until venting has been completed.

7.7.2 Unloading

Unloading of the chamber may commence after venting. The ventilation system should be kept running during this process.

7.7.3 Aeration of Fruit

Treated fruit shall be given sufficient time to air after treatment to allow adequate dispensing of the fumigant and compliance with occupational health and safety standards.

Inadequate aeration of fruit poses grave risks to the health of workers involved in unpacking, transport and marketing of fumigated fruit.

7.8 Post Treatment Security

The Business shall ensure ~~A~~all treated fruit ~~must be~~is stored at and transported from the facility in secure conditions which prevent ~~re~~infestation by Papaya fruit fly.

Secure conditions include-

(a) unvented packages;

(b) vented packages with the vents secured with gauze/mesh with a maximum ~~diameter~~aperture of 1.6 mm;

(c) fully enclosed under tarpaulins, hessian, shade cloth, ~~or~~ mesh or other covering which provides a maximum ~~with a maximum diameter~~aperture of 1.6 mm;

(d) shrinkwrapped and sealed as a palletised unit;

(e) fully enclosed or screened buildings, coldrooms, vehicles or other facilities free from gaps or other entry points greater than 1.6 mm.

~~7.9 Package Identification~~

~~The Inspector shall ensure at least one end of each package is marked in indelible and legible characters of at least 5mm, with -~~

- ~~the Interstate Produce (IP) number of the approved fumigation facility in which the produce was treated; and~~
- ~~the words "TREATED FOR PFF"; and~~
- ~~the date (or date code) on which the fruit was packaged for sale.~~

7.9 Treatment Records

The Fumigator must record each fumigation using a Fumigation Treatment Record (refer Attachment ~~4~~1) or a record which captures the same information.

Treatment records must identify -

- the date of fumigation;
- the commencement time of the fumigation;
- the completion time of the fumigation;
- all temperature measurements taken prior to fumigation;
- the fumigation dosage rate;
- the total quantity in grams of fumigant released in the fumigation;
- growers identification
- type of fruit treated
- quantity of fruit treated
- fumigators QDH licence number, name and signature

All treatment records must be maintained for a period of at least 12 months.

7.10 Dispatch

7.10.1 Package Identification

The Authorised Dispatcher shall ensure that, after treating and packing, each package is marked in indelible and legible characters of at least 5mm, with -

- the Interstate Produce number of the Business that operates the approved facility in which the produce was treated; and
- the words "MEETS ICA-04~~2~~"; and
- the date (or date code) on which the fruit was treated;

prior to the issuance of an Assurance Certificate by the Business under this Operational Procedure.

7.10.2 Completion and Issuance of an Assurance Certificate for Flood Spraying Under a Certification Assurance Arrangement

The Authorised Dispatcher shall ensure an Assurance Certificate is completed and signed by an Authorised Signatory of the Business prior to movement of fruit from a Papaya Fruit Fly Pest Quarantine Area.

Assurance Certificates shall be in the form of a *Plant Health Assurance Certificate* (FDU 384). A completed example is shown as Attachment 2.

Individual Assurance Certificates shall be issued to cover each consignment (ie. a discreet quantity of product transported to a single consignee at one time) to avoid splitting of consignments.

Declarations shall be completed, issued and distributed in accordance with the Work Instruction "Guidelines for Completion of Assurance Certificates for Fruit Treated by a Business Operating Under a CA Arrangement" (WI-02).

7.10.3 Assurance Certificate Distribution

The original (yellow copy) must accompany the consignment.

The duplicate (white copy) must be retained by the Business.

7.11 CA System Records

The Business shall maintain the following records-

(a) ~~pray Mixture Top Up Program (if spray mixture is topped up)~~Fumigation Dosage Chart -(refer 7.6.2~~5.2~~);

(b) Thermometer calibration records (refer 7.4.3);

(c) If applicable, Scale Calibration Records (refer 7.6.3 (b))

~~(d) Chemical Mixture Analysis Record (refer 7.6.4);~~

~~(d) Spray Coverage Test Record (refer 7.8.2);~~

~~(d) Spray Application Rate Test Record (refer 7.8.4);~~

(d) ~~Spray Mixture Preparation, Top Up and~~Fumigation Treatment Record (refer 7.~~11~~9);

(e) a copy of each *Plant Health Assurance Certificate* (FDU 384) issued by the Business (refer 7.11~~2~~.3).

CA system records shall be retained for a period of 12 months from completion, or until the next audit of the CA system by an Inspector, whichever is the earlier.

CA system records shall be made available on request by an Inspector.

7.12 CA System Documentation

The Business shall maintain the following documentation-

(a) a copy of the Business's current *Application for Accreditation* (refer Attachment 1);

(b) a current copy of this Operational Procedure;

(c) a current *Certificate of Accreditation for a Plant Health ~~Business Operating a~~ Certification Assurance (CA) Arrangement.*

CA system documentation shall be made available on request by an Inspector.

8. DOCUMENTATION

Attachment 1	*Application for Accreditation of a Business for a Plant Health Certification Assurance (CA) Arrangement*	FDU 385 **(FRONT PAGE ONLY)**
Attachment 2	*Plant Health Assurance Certificate*	FDU 384 **(COMPLETED EXAMPLE)**
Attachment 3	Fumigation Treatment Record	**(BLANK)**
Attachment 4	Fumigation Dosage Chart	**(BLANK)**

Application for Accreditation of a Business for a Plant Health Certification Assurance (CA) Arrangement

DPI QUEENSLAND DEPARTMENT OF PRIMARY INDUSTRIES

Tick each box that describes your business and the CA arrangement and provide specific details where required. Only one CA arrangement, that is one Operational Procedure at one Facility, may be covered in one application.

Indicate the type of application being made. ☐ New ☐ Renewal ☐ Amendment

1. *Business Details*

(a) Type of Ownership of Business

☐ Individual ☐ Incorporated Company ☐ Other (please specify) ....

☐ Partnership ☐ Cooperative Association

(b) Name of Applicant/s

Please supply name in full. For a partnership, list the full names of each partner in their normal order. Companies must provide their Australian Company Number (ACN) or Australian Registered Body Number (ARBN) and attach a copy of the Certificate of Incorporation. Cooperative associations must provide appropriate proof of registration (i.e. a copy of the Certificate of Registration or registration search from the Department of Justice)

☐ ACN
☐ ARBN

(c) Trading Name/s of the business (as shown on packages sent to market)

(d) Postal address of the business

Postcode

Telephone ( )
Facsimile ( )
Mobile

(e) Has the business been registered previously for the interstate movement of produce? ☐ No ☐ Yes ➤ If yes, give the business's Interstate Produce (IP) Number Q

(previously known as the Victorian or Q Number)

2. *Operational Procedure and Facility Details*

(a) Operational Procedure used in this CA arrangement (refer to list of Operational Procedures)

Reference No. ICA

Title of Operational Procedure

(b) Street address of the facility

Postcode

Telephone ( )
Facsimile ( )
Mobile

3. *Authorised Signatories (for Assurance Certificates)*

	Family Name	Given Name/s	Specimen Signature
Certification Controller			
Back-Up Certification Controller			
Additional Authorised Signatories			

QUEENSLAND DEPARTMENT OF PRIMARY INDUSTRIES

Original (yellow) - Consignment Copy
Duplicate (white) - Business Copy

Plant Health Assurance Certificate

ORIGINAL

Consignment Details (Please print)

Certificate Number: 9999999

Consignor	Consignee
Name: John's Strawberries P/L	Name: Strawberry Agents
Address: Plantation Road, Atherton QLD 4883	Address: Footscray Markets, Footscray VIC 3011

Reconsigned To (Splitting consignments or reconsigning whole consignments)	Method of Transport (Provide details where known)
Name	☐ Road — Truck/Trailer Registration no.
Address	☐ Rail — Consignment no.
	☐ Air — Airline/Flight no.
	☐ Sea — Vessel Name & Voyage no.

Certification Details (Please print)

Accredited Business that Prepared the Produce	Grower or Packer
Name: MB Fumigators P/L	Name: John's Strawberries P/L
Address: Industrial Road, Atherton QLD 4883	Address: Plantation Road, Atherton QLD 4883

IP No. of Acc. Business	Brand Name or Identifying Marks (as marked on packages)	Date Code (as marked on packages)
Q9999	John's Strawberries	690829

Number of Packages	Type of Packages (eg. trays,cartons)	Type of Produce	Authorisation for Split Consignment
2000	Trays	Strawberries	

Date	Treatment	Chemical (Active Ingredient)	Concentration	Duration and Temperature
/ /	☐ Dipping	Dimethoate	400ppm	☐ One min. ☐ 10 sec. then wet for 60 sec.
/ /	☐ Dipping	Fenthion	412.5ppm	☐ One min. ☐ 10 sec. then wet for 60 sec.
/ /	☐ Flood Spraying	Dimethoate	400ppm	10 seconds then wet for 60 seconds
/ /	☐ Flood Spraying	Fenthion	412.5ppm	10 seconds then wet for 60 seconds
/ /	☐ Non-recirculated Spray	Fenthion	412.5ppm	10 seconds then wet for 60 seconds
23/08/96	☑ Fumigation	Methyl Bromide	24 g/m³	Two hours @ 22 C°
/ /	☐ Heat Treatment	☐ Hot Air	☐ Hot Water	min. @ C°
/ /	☐			
/ /	☐ Bananas in a hard green condition with unbroken skin			

Additional Certification

Declaration

I, an Authorised Signatory of the accredited business that prepared the plants or plant produce described above, hereby declare that the plants or plant produce have been prepared in the business's approved facilities in accordance with the business's Certification Assurance arrangement under the *Plant Protection Act 1989* and that the details shown above are true and correct in every particular.

Authorised Signatory's Name (Please print)	Signature	Date
Fred Fumigator	F Fumigator	29/8/96

Form FDU 384 6/96

Forms Management Unit

FUMIGATION DOSAGE CHART

Business Name: _____

Interstate Produce No. Q _____

Chamber Identification: _____

Total Chamber Volume: _____ m^3

DOSAGE CHART

Concentration (g/m^3)	Quantity of Methyl Bromide	
	Grams (g)	Millilitres (mL)
24		
32		
40		
48		

Prepared by: _____ _____ / /

Printed Name Signature Date

FUMIGATION TREATMENT RECORD

Owner of Fumigation Facility:				Interstate Produce No.:	Q
Date of Fumigation:	/ /	Chamber ID:		Chamber Volume:	m^3
Fumigator's Name:				QDH Licence No:	
Temperature Readings (°C):				Fumigation Rate:	
Temperature Range (°C):	Maximum Temperature °C	Minimum Temperature °C		Amount of Fumigant Used:	

Grower/Packer Name	Number of Packages	Product Type (eg Banana)	Type of Packages (Cartons, Bins etc.)	Time of Vaporisation	Time of Venting	Chamber Loading (%)	ID Code *(If applicable)*

Comments:

1. PURPOSE

The purpose of this procedure is to describe -

(a) the principles of operation, design features and standards required for fumigation facilities; and

(b) the responsibilities and actions of personnel;

that apply to the certification of fumigation of fruit with methyl bromide for fruit fly for movement from a Papaya Fruit Fly Pest Quarantine Area under a Certification Assurance (CA) arrangement.

2. SCOPE

This procedure covers all certification of methyl bromide fumigation by a Business operating under a Certification Assurance arrangement within a Papaya Fruit Fly Pest Quarantine Area.

Fumigation with methyl bromide may be used for all fruits however it should be noted that some fruits may be damaged by fumigation. Testing of small quantities of fruit for damage is recommended.

This procedure does not abrogate the responsibility of licensed fumigators to comply with the legislative requirements as prescribed in the *Health (Poisons-Fumigation) Regulations 1973* and *Work Place Health and Safety Act 1995*.

3. REFERENCES

AQIS	*Standard for Fumigation with Methyl Bromide (Version 2.0, December 1994)* Australian Quarantine and Inspection Service, DPI &E.
Bond, E.J.	*Manual of Fumigation for Insect Control (1984)* FAO Plant Production and Protection Paper 54.
Gellatley, J.G., Rigney, C.J., Rippon, L.E. and Seberry, J.A.	*Fumigation of Fresh Fruit and Vegetables (1978)* Fresh Fruit Disinfestation Sub-Committee, Commonwealth Department of Primary Industries.
Infosafe No: NU01R	*Material Safety Data Sheet - Product: Methyl Bromide 980 Fumigant (Issued Nufarm 26/02/92)* NUFARM Ltd.
Permit No. OPM0150K	*Off-Label Use of a Registered Agricultural Chemical* (Effective from 22 November 1995) National Registration Authority.
Queensland Government	*Health (Poisons-Fumigation) Regulation 1973.*

WI-02	*Guidelines for Completion of Assurance Certificates for Fruit Treated by a Business Operating Under a CA Arrangement.*

4. DEFINITIONS

Act	means the *Plant Protection Act 1989*.
Application for Accreditation	means an *Application for Accreditation of a Business for a Plant Health Certification Assurance (CA) Arrangement* (FDU 385).
Assurance Certificate	means a *Plant Health Assurance Certificate* (FDU 384).
Authorised Signatory	means an officer of a CA accredited Business whose name and signature is provided as an authorised signatory with the Business's *Application for Accreditation.*
Banana fruit fly	means all stages of the species *Bactrocera musae*.
Business	means the legal entity responsible for the operation of the fumigation facility and Certification Assurance arrangement detailed on the Business's *Application for Accreditation.*
CA	means Certification Assurance.
Certification Assurance	means a voluntary arrangement between the Department of Primary Industries and a Business that demonstrates effective in-house quality management and provides assurance through documented procedures and records that produce meets specified requirements.
certified/certification	means covered by a valid *Plant Health Assurance Certificate* (FDU 384) issued by a Business operating under a CA arrangement for fumigation with methyl bromide.
chamber	means a permanent or semi-permanent enclosure made from gas-proof material specifically designed for the purpose of fumigation.
colorimetric tubes	Draeger/Kitagawa stain or detector tubes for measuring fumigant concentrations.
facility	means the location of the fumigation operation covered by the Certification Assurance arrangement
fumigant	means 1000g/kg methyl bromide (CH_3Br).
fumigation	means the treatment of fruit with a fumigant.
fumigator	means a person licensed to undertake fumigation pursuant to the *Health (Poisons-Fumigation) Regulations 1973*.

fruit	means produce that consists of the ripened ovary of the flower (and in most instances enclosing seeds except certain species where cultivated varieties have been bred to be seedless such as bananas) of all species of plants except non-host fruit species.
fruit fly	means Papaya fruit fly, Queensland fruit fly and Banana fruit fly.
Inspector	means an inspector appointed under *the Plant Protection Act 1989* and an authorised person exercising any or all of the powers with which the person has been authorised under Section 6(1).
Papaya fruit fly	means all stages of the species *Bactrocera papayae.*
Papaya Fruit Fly Pest Quarantine Area	means a quarantine area declared under Section 11 of the *Plant Protection Act 1989* for Papaya fruit fly.
Queensland Fruit Fly	means all stages of the species *Bactrocera tryoni* and related species *B. aquilonis* and *B. neohumeralis.*
Suspension Area	means within 50 km from the site of a confirmed outbreak of Papaya fruit fly, or within 30 km from a confirmed outbreak of 1.2 km or less in diameter.

5. RESPONSIBILITY

These position titles have been used to reflect the responsibilities of staff under the CA arrangement. These positions may not be present in all Businesses, or different titles may be used for staff who carry out these responsibilities. In some Businesses one person may carry out the responsibilities of more than one position.

The **Certification Controller** is responsible for -

- ensuring the fumigation facility has been approved or deemed an as of right use by the Local Authority (as applicable);
- ensuring the fumigation facility is covered by a valid Gas Retention Test Certificate issued by a licensed fumigator within the previous six months;
- ensuring thermometers used for measuring fruit flesh temperatures are identifiable and calibrated at least weekly;
- ensuring that where scales are used to measure fumigant that these are calibrated at least every 6 months;
- ensuring all fumigations are performed by a licensed Fumigator;
- ensuring the Business has current accreditation for a Certification Assurance arrangement covering fumigation with methyl bromide for fruit fly;
- training staff in their duties and responsibilities under this Operational Procedure;
- ensuring the Business and its staff comply with their responsibilities under this Operational Procedure;
- ensuring that all fumigation of fruit certified under the Business's CA arrangement is carried out in accordance with this Operational Procedure.

The **Fumigator** is responsible for -

- ensuring fumigations are conducted in accordance with this procedure;
- recording and maintaining treatment records in accordance with this procedure;
- determining the chamber volume;
- determining the minimum fruit temperature for each fumigation;
- determining the quantity of fumigant required for each fumigation;
- maintaining thermometer identification and calibration records;
- maintaining weighing scale calibration records (if applicable).

The **Authorised Dispatcher** is responsible for -

- ensuring all treated fruit is protected against reinfestation by fruit fly after treatment in accordance with 7.8 Post Treatment Security;
- ensuring all packages containing certified fruit are identified in accordance with 7.10.1 Package Identification;
- ensuring an Assurance Certificate is issued for all fruit intended to be dispatched for movement from the Papaya Fruit Fly Pest Quarantine Area;
- maintaining copies of all Assurance Certificates issued by the Business under the CA arrangement.

6. BACKGROUND

This Operational Procedure details -

- the requirements and procedures for accreditation of a Business for a Certification Assurance arrangement for fumigation with methyl bromide for fruit fly;
- the responsibilities and procedures which must be undertaken by a Business and its staff before issuing a Plant Health Assurance Certificate for Fumigating with Methyl Bromide under a CA arrangement.

Fruit prepared in approved facilities under a CA arrangement and certified in accordance with this Operational Procedure will be accepted as meeting the requirements for movement of fruit from the declared Suspension Area out of a Papaya Fruit Fly Pest Quarantine Area.

This Operational Procedure does not attempt to address the responsibilities and procedures that must be followed to meet requirements of other regulatory authorities including Work Place Health and Safety, Environmental and Health Departments or Local Government authorities.

The Department of Primary Industries maintains the right to inspect at any time fruit prepared for certification under a CA arrangement, and to refuse to accept an Assurance Certificate issued by a Business operating under a CA arrangement where produce is found not to conform to specified requirements (refer 7.1 Requirement).

7. PROCEDURE

7.1 Requirement

Methyl bromide fumigation at 32g/m^3 for two hours at a fruit temperature of 21° C or above or equivalent dosage as follows -

Methyl Bromide (g/m^3)	Flesh Temperature (degrees Celsius)	Time (hours)
24	26-31.9	2
32	21-25.9	2
40	15-20.9	2
48	10-14.9	2

Loading rates within the chamber must be not less than 30% nor more than 50% of the volume of the chamber when empty.

100% methyl bromide must be used for fumigating fruit. The use of fumigants containing 98% methyl bromide and 2% chloropicrin does not have National Registration Approval for the fumigation of fruit as chloropicrin is phytotoxic and is likely to damage fruit.

7.2 Accreditation of a Business for a Certification Assurance Arrangement for Fumigating with Methyl Bromide

The Business operating a fumigation facility seeking accreditation for a Certification Assurance arrangement shall make application for accreditation by lodging an *Application for Accreditation of a Business for a Plant Health Certification Assurance (CA) Arrangement* (FDU 385) (refer Attachment 1).

Applications must be lodged at least ten working days prior to the intended date of commencement of certification of fruit under this Operational Procedure.

7.2.1 Accreditation Process

Prior to accrediting a Business for a Certification Assurance arrangement for fumigating with methyl bromide, an Inspector shall carry out an initial audit of the Business to:

(a) verify that the fumigation facility has been approved or deemed as an as of right of use by the Local Authority (as applicable) by sighting documentary evidence of same;

(b) verify that the fumigation facility is covered by valid Gas Retention Test Certificate(s), issued by a licensed fumigator in accordance with 7.6.8 Gas Retention Testing of the Fumigation Chamber, within the last six months by obtaining a copy of the relevant test certificate(s);

(c) verify that the fumigation facility is a permanently constructed fumigation chamber or a semi-permanent fumigation chamber made from gas-proof material designed specifically for the purpose of fumigating fresh fruit;

Stack fumigation under impervious gas sheets (tarpaulins) is not permitted.

(d) verify that fumigations will be undertaken by a licensed fumigator;

(e) verify that the Business maintains a current version of this Operational Procedure and a current copy of the Business's *Application for Accreditation*;

(f) verify that the business maintains suitable temperature measuring equipment in accordance with 7.4.1 Equipment;

(g) verify that the business calibrates and maintains thermometer calibration records in accordance with 7.4.3 Calibration of Thermometers;

(h) verify that the business maintains suitable scales in accordance with 7.6.3 (b) if using a Loss of Weight System;

(i) verify the business calibrates and maintains scale calibration records in accordance with 7.6.3(b);

(j) verify the Business maintains the records and other documentation required under this Operational Procedure;

(k) verify the Business has the procedures and equipment in place to mark certified packages in accordance with 7.10.1 Package Identification;

(l) verify the Business has the procedures and equipment in place to maintain treated fruit in secure conditions and prevent mixing with untreated fruit in accordance with 7.8 Post Treatment Security;

(m) verify staff have been trained and are aware of their responsibilities and duties under the Certification Assurance arrangement.

7.2.2 Certificate of Accreditation

Following successful completion of an Initial Audit, the Business receives a *Certificate of Accreditation for a Plant Health Certification Assurance (CA) Arrangement* detailing the facility location and treatment for which the Business is accredited and the period of accreditation.

The Business shall maintain a copy of the current Certificate of Accreditation and shall make this available on request by an Inspector.

7.3 Calculation of Fumigation Chamber Volume

The volume of the space to be fumigated is the volume of the total space enclosed for fumigation. It is to be calculated using a measuring tape or other suitable device to determine length, width and height and is to be expressed in cubic metres (m^3).

Where an enclosed chamber is used for fumigation, the volume of any gas circulation equipment external to the chamber which is not sealed from the chamber during fumigation must also be used in the calculation of the volume.

The following calculation may be used to determine the volume of the chamber in cubic metres (m^3) -

(chamber height (m) x chamber length (m) x chamber width (m)) + external ducting volume (m^3) = total chamber volume m^3

For example-

Chamber Height	=	*2.5 metres*
Chamber Length	=	*3 metres*
Chamber Width	=	*3 metres*
Chamber Volume	=	*2.5 x 3 x 3 = 22.5 m^3*
External Ducting Volume	=	*0.5 m^3* **(if applicable)**
Total Chamber Volume	=	*22.5 m^3 + 0.5 m^3 = 23.0 m^3*

Details of chamber volume, and fumigant dosage rates shall be prominently displayed in the vicinity of the chamber (refer 7.6.2 Fumigation Dosage Chart).

7.4 Calculation of Fruit temperature

Immediately prior to the commencement of a fumigation, the Fumigator shall determine the minimum flesh temperature of each load of fruit to be fumigated.

7.4.1 Equipment

Thermometers used for measuring fruit temperature may be of the bimetallic, glass (mercury or alcohol) or digital type and shall be uniquely identified for calibration purposes.

7.4.2 Measurement

The Fumigator shall measure the flesh temperature of one centre fruit and one outer fruit from each pallet or bulk bin.

For unpalletised produce, a minimum of one outer and one inner fruit from every twentieth package shall be sampled.

A minimum of five temperature readings shall be taken from each position for each lot of fruit to be fumigated.

7.4.3 Calibration of Thermometers

Thermometers used for measuring fruit temperature shall have been calibrated within the previous seven (7) days and shall be accurate to within ± 0.5° C.

Calibration may be undertaken using the ice/water slurry method or by a recognised testing authority.

The business shall maintain results of calibration checks on thermometers. Thermometer calibration records shall record the following information-

- the date of calibration;
- the identification of the thermometer calibrated;
- confirmation that the equipment is accurate to within ± 0.5° C;
- the officer responsible for conducting the calibration check.

Ice/water Slurry Calibration

A slurry mixture of ice water and shaved ice is prepared in an insulated vessel. Each thermometer is calibrated by placing in the insulated vessel and recording the indicated temperature. If the indicated temperature is outside the range 0 ± 0.5° C the thermometer is unsuitable for use under this procedure. While it may be possible to adjust electronic thermometers, inaccurate glass thermometers shall be replaced and appropriate records made.

7.4.4 Fruit Temperature Records

The Fumigator shall record each temperature and the maximum and minimum fruit flesh temperatures of the load on the Fumigation Treatment Record (refer Attachment 4).

7.5 Preparing, Loading and Sealing the Chamber

7.5.1 Preparing the Chamber

The Fumigator shall check the chamber for damage and possible leak sites prior to the chamber being loaded.

Any damage (eg damaged door seals or tears in tent walls) shall be made good prior to loading.

The Fumigator shall check chamber circulation and ventilation systems are operating correctly and ensure all vents are closed and sealed prior to the chamber being loaded.

7.5.2 Loading the Chamber

The Fumigator shall ensure that an adequate distance is maintained between each pallet or bulk bin and the sides and top of the chamber to allow circulation of the fumigant. A 5 cm space shall be left between each pallet load or bulk bin in the chamber with a minimum space of 10 cm between the top and sides of produce to the walls and ceiling.

Fruit may be fumigated either unpacked in bulk bins or following packing.

The fumigator shall ensure that goods which are packaged or covered with impervious materials such as plastic bags or waxed paper are opened, cut or removed to allow penetration of the gas.

7.5.3 Placement of Gas Supply Line(s)

The gas supply line(s) shall be strategically placed within the chamber to effectively introduce and allow dispersal of the gas. As the fumigant is more than three times heavier than air, the gas should be introduced directly into the airstream of the circulation fan. Precautions must be taken to prevent any liquid fumigant coming in contact with product being fumigated.

A piece of impermeable sheeting (plastic or rubberised canvas) or a tray may be used.

Adequate fan circulation must be provided to circulate the fumigant (refer 7.6.5).

7.5.4 Placement of Gas Sampling Lines

When gas concentrations are to be monitored during fumigations, gas sampling lines must be positioned within the chamber for each fumigation. Sampling lines must be crushproof (for example 6 mm internal diameter hydraulic hose is effective) and must be positioned as follows -

(a) for chambers less than 5 m^3 one gas sampling line shall be located in the centre of the stack;

(b) for chambers 5 m^3 or greater three sampling lines shall be used and located at the top back, centre, and base front of the stack.

7.5.5 Sealing the Chamber

Once all fruit has been placed in to the chamber the fumigator shall ensure the chamber is gas tight by closing all vents and access points and checking all possible leak sites such as doors, gaskets and joints.

7.6 Fumigation

After the chamber has been sealed the Fumigator turns on all circulation fan(s).

7.6.1 Calculation of Fumigant Dosage

The fumigant dosage rate is specified in 7.1 Requirement for an optimal temperature of 21° C. The dosage rate may be varied by 8g/m^3 for every 5° C change in temperature to a minimum 10° C and maximum 32° C in accordance with the Table.

Treatment must not commence if the temperature of the fruit is below 10° C or above 32° C.

The dosage rate applied to a fumigation shall be determined by the temperature of the **coldest fruit** from any lot of fruit to be fumigated within the chamber.

Determine the amount of methyl bromide required in grams (g) using the following formula -

chamber volume x dosage rate = g methyl bromide

For example 22.5m^3 x 32g/m^3 = 720 g methyl bromide

The Fumigator shall maintain records of the total amount of methyl bromide applied for each fumigation on the Fumigation Treatment Record (refer Attachment 4).

7.6.2 Fumigation Dosage Chart

The Business shall maintain a Fumigation Dosage Chart (refer Fumigation Dosage Chart - Attachment 3) or similar record in close proximity to the chamber for each chamber used by the Business for fumigation under this Operational Procedure.

The chart shall provide the following details-

(a) the Business's name and Interstate Produce (IP) number;

(b) the identification of the chamber to which the chart applies;

(c) the total chamber volume in cubic metres;

(d) the quantity of methyl bromide in grams (g) required to be added to the chamber to achieve a concentration of 24, 32, 40 and 48 g/m^3.

(e) the printed name and signature of the licensed fumigator responsible for the preparation of the chart and the date of preparation.

7.6.3 Application of Fumigant

(a) Sealed System

The fumigator measures out the required amount of fumigant into the measuring cylinder. After the required amount of fumigant has been decanted and checked the fumigant is introduced into the chamber via the volatiliser.

(b) Loss of Weight System

The Fumigator measures out the required amount of fumigant by the loss of weight in the dispensing cylinder.

To operate this method, the dispensing cylinder is placed onto scales to allow the weight of the cylinder to be determined before application of the fumigant.

The Fumigator must tare off the weight of the required amount of fumigant on the dispensing cylinder and open the valve to apply the required amount until the cylinder is at the tared weight.

Scales used for the Loss of Weight System must be calibrated using a known weight at least every six months.

Records of calibration must be maintained and include date of calibration, person responsible and result of calibration.

7.6.4 Vaporiser/Volatiliser

Although Methyl Bromide has a boiling point of 3.6° C and will vaporise when released at temperatures above 4.0° C, freezing may occur as the gas is released from the delivery cylinder. For this reason a vaporiser or volatiliser must be used to introduce the methyl bromide as a hot gas.

A suitable device has part of the delivery tube of copper, coiled and submerged in hot water.

7.6.5 Mixing of Fumigant

To ensure adequate mixing of the fumigant, fans should be used to disperse the gas throughout the chamber and thereby enhance the penetration of the fumigant. Once the gas is evenly distributed it maintains that condition unless an outside event such as excessive leakage occurs.

It is suggested that an axial fan capable of providing 60 room changes of volume per hour be used for 15 minutes after the introduction of the gas. Low velocity/low volume fans may be used for longer periods.

The use of high velocity/high volume fans for periods longer than 15 minutes may lead to the fumigant being forced from the chamber.

Fumigation commences once all the fumigant has been introduced into the chamber and vaporised (the time of vaporisation).

Effective mixing of the methyl bromide may be determined by monitoring gas concentrations at all monitoring points 20 minutes after the introduction of the gas (refer 7.6.7 Monitoring Fumigant Concentration). All monitoring points must equilibrate within ± 5% of each other (where more than one sampling point is used), otherwise the fumigation is deemed to have failed (refer 7.6.8(c)).

7.6.6 Testing for Leaks

Once the fumigation has commenced, the Fumigator shall test the chamber for leaks using a halide lamp. Sites checked shall include -

- doors sealing points;
- external ducting;
- exit points for supply lines and gas sampling lines.

Any leaks detected shall be repaired immediately. If leaks are detected that can not be repaired during the treatment, the fumigation must be aborted and the chamber repaired before further use.

7.6.7 Monitoring Fumigant Concentration

Effective fumigation is dependent on maintaining a satisfactory level of fumigant within the chamber during the fumigation. Monitoring of fumigant concentration is not mandatory for every fumigation, however this is a preferred practice (refer 7.6.8 Gas Retention Testing of the Fumigation Chamber).

Fumigators may elect to monitor gas concentration during fumigations. Where monitoring indicates that the required concentrations will not be achieved the fumigator shall vent off all fumigant, ensure gas freedom and then inspect the chamber for the possible cause.

When the cause has been rectified the produce must be re-gassed at the specified rate.

7.6.8 Gas Retention Testing of the Fumigation Chamber

All fumigation chambers operated for Fumigating with Methyl Bromide under A Certification Assurance Arrangement must be covered by a valid Gas Retention Test Certificate issued by a licensed fumigator on the basis of tests conducted under the supervision of an Inspector. Operational chambers must be tested at least every six months or as required by an inspector in accordance with the following -

(a) After preparing the chamber in accordance with the requirements of this Operational Procedure, gas concentrations shall be measured and recorded 20 minutes after the start of the fumigation and at two hours after the start of the fumigation **prior** to venting;

(b) All monitoring points shall be measured to determine that the required concentration has been attained. All monitoring points shall equilibrate within ± 5% of each other at the twenty minute monitoring where more than one monitoring point is in use (refer 7.5.4 Placement of Gas Sampling Lines);

(c) Where monitoring points are not equilibrated within ± 5% of each other at the twenty minute monitoring, the fumigation will be deemed to have failed and the fumigator shall vent off all fumigant, ensure gas freedom and then inspect the chamber for the possible cause;

(d) A minimum of 50% of the original fumigant concentration is required to be retained at the final monitoring (after two hours). If the required final concentrations are not reached then the fumigation will be deemed to have failed and the fumigator shall vent off all fumigant, ensure gas freedom and then inspect the chamber for the possible cause;

(e) At least one successful fumigation retention test for a chamber must be undertaken before a Gas Retention Test Certificate may be issued for that chamber. The supervising Inspector may require additional fumigation retention testing if this is considered necessary;

It is recommended that newly constructed chambers be tested for leakage using a coloured smoke generator prior to gas retention testing using methyl bromide.

(f) The Gas Retention Test Certificate will record -

- the Business's name and Interstate Produce (IP) number;
- the identification of the chamber to which the certificate applies;
- the measurements of the chamber;
- the total chamber volume in cubic metres;
- the quantity of methyl bromide in grams (g) added to the chamber to achieve the concentrations at the time of the test(s);
- the readings for each monitoring point, for each test at the 20 minute monitoring;
- the readings for the each monitoring point, for each test at the end of the test (at two hours after vaporisation is complete);
- the printed name and signature of the licensed fumigator who performed the test(s).

This information shall be recorded using the Gas Retention Test Certificate (refer Attachment 5) or a record which captures the same information.

7.7 Completion of Fumigation

7.7.1 Venting

After two hours of treatment the chamber should be ventilated by running the exhaust system to extract all of the gas remaining and ensure that the concentration of methyl bromide is below 5 ppm before produce is released from the chamber.

The fumigator should check fumigant concentrations by drawing an air sample from the chamber into a colorimetric tube before releasing the chamber. Air samples must be taken near the floor of the chamber in the vicinity of the exhaust duct. This can be accomplished by installing a metal tube in the chamber to transport the sample from the floor to an opening in the chamber wall.

The concentration of methyl bromide in the chamber must be below the Exposure Standard of 5 ppm or less before the product can be released. If the concentration is greater than 5 ppm then forced venting should be resumed and further measurements of concentration taken.

Inadequate aeration of fruit poses grave risks to the health of workers involved in unpacking, transport and marketing of fumigated fruit.

7.7.2 Unloading

Unloading of the chamber may commence after the fumigator has released the produce. The ventilation system should be kept running during this process.

7.7.3 Aeration of Fruit

Treated fruit shall be given sufficient time to air after treatment to allow adequate dispersal of the fumigant out of the fruit and ensure that the Exposure Standard of 5 ppm of methyl bromide and maximum residue limits are not exceeded.

7.8 Post Treatment Security

The Business shall ensure all treated fruit is stored at and transported from the facility in secure conditions which prevent infestation by Papaya fruit fly.

Secure conditions include -

(a) vented packages with the vents secured with gauze/mesh with a maximum aperture of 1.6 mm;

(b) fully enclosed under tarpaulins, hessian, shade cloth, mesh or other covering which provides a maximum aperture of 1.6 mm;

(c) screened buildings, coldrooms, vehicles or other facilities free from gaps or other entry points greater than 1.6 mm.

7.9 Treatment Records

The Fumigator must record each fumigation using a Fumigation Treatment Record (refer Attachment 4) or a record which captures the same information.

Treatment records must identify -

- the date of fumigation;
- fumigator's QDH licence number, name and signature;
- grower's identification;
- type of fruit treated;
- quantity of fruit treated;
- all temperature measurements taken prior to fumigation;
- the fumigation dosage rate;
- the total quantity in grams of fumigant released in the fumigation;
- the commencement time of the fumigation (the time of vaporisation);
- the completion time of the fumigation (the time of venting).

All treatment records must be maintained for a period of at least 12 months (refer 7.11 CA System Records).

7.10 Dispatch

7.10.1 Package Identification

The Authorised Dispatcher shall ensure that each treated package is marked in indelible and legible characters of at least 5mm, with -

- the Interstate Produce number of the Business that operates the approved facility in which the produce was treated; and
- the words "MEETS ICA-04"; and
- the date (or date code) on which the fruit was treated;

prior to the issuance of an Assurance Certificate by the Business under this Operational Procedure.

7.10.2 Completion and Issuance of an Assurance Certificate for Fumigating with Methyl Bromide Under a Certification Assurance Arrangement

The Authorised Dispatcher shall ensure an Assurance Certificate is completed and signed by an Authorised Signatory of the Business prior to movement of fruit from a Papaya Fruit Fly Pest Quarantine Area.

Assurance Certificates shall be in the form of a *Plant Health Assurance Certificate* (FDU 384). A completed example is shown as Attachment 2.

Individual Assurance Certificates shall be issued to cover each consignment (ie. a discrete quantity of product transported to a single consignee at one time) to avoid splitting of consignments.

Declarations shall be completed, issued and distributed in accordance with the Work Instruction "Guidelines for Completion of Assurance Certificates for Fruit Treated by a Business Operating Under a CA Arrangement" (WI-02).

7.10.3 Assurance Certificate Distribution

The original (yellow copy) must accompany the consignment.

The duplicate (white copy) must be retained by the Business.

7.11 CA System Records

The Business shall maintain the following records-

(a) Fumigation Dosage Chart (refer 7.6.2);

(b) Thermometer calibration records (refer 7.4.3);

(c) If applicable, Scale Calibration Records (refer 7.6.3 (b))

(d) Gas Retention Test Certificates (refer 7.6.8);

(e) Fumigation Treatment Record (refer 7.9);

(f) a copy of each *Plant Health Assurance Certificate* (FDU 384) issued by the Business (refer 7.10.3).

CA system records shall be retained for a period of 12 months from completion, or until the next audit of the CA system by an Inspector, whichever is the earlier.

CA system records shall be made available on request by an Inspector.

7.12 CA System Documentation

The Business shall maintain the following documentation-

(a) a copy of the Business's current *Application for Accreditation* (refer Attachment 1);

(b) a current copy of this Operational Procedure;

(c) a current *Certificate of Accreditation for a Plant Health Certification Assurance (CA) Arrangement.*

CA system documentation shall be made available on request by an Inspector.

8. DOCUMENTATION

Attachment 1	*Application for Accreditation of a Business for a Plant Health Certification Assurance (CA) Arrangement*	FDU 385 **(FRONT PAGE ONLY)**

Attachment 2	*Plant Health Assurance Certificate*	FDU 384 **(COMPLETED EXAMPLE)**
Attachment 3	Fumigation Treatment Record	**(BLANK)**
Attachment 4	Fumigation Dosage Chart	**(BLANK)**
Attachment 5	Gas Retention Test Certificate	**(BLANK)**

DPI
QUEENSLAND DEPARTMENT OF PRIMARY INDUSTRIES

Application for Accreditation of a Business for a Plant Health Certification Assurance (CA) Arrangement

Tick each box that describes your business and the CA arrangement and provide specific details where required. Only one CA arrangement, that is one Operational Procedure at one Facility, may be covered in one application.

Indicate the type of application being made: ☐ New ☐ Renewal ☐ Amendment

1. *Business Details*

(a) Type of Ownership of Business

☐ Individual ☐ Incorporated Company ☐ Other (please specify) .....

☐ Partnership ☐ Cooperative Association

(b) Name of Applicant/s

.....

.....

Please supply name in full. For a partnership, list the full names of each partner in their normal order. Companies must provide their Australian Company Number (ACN) or Australian Registered Body Number (ARBN) and attach a copy of the Certificate of Incorporation. Cooperative associations must provide appropriate proof of registration (i.e. a copy of the Certificate of Registration or registration search from the Department of Justice)

☐ ACN ☐ ARBN

(c) Trading Name/s of the business (as shown on packages sent to market)

(d) Postal address of the business

.....

.....

Postcode

Telephone ( )

Facsimile ( )

Mobile

(e) Has the business been registered previously for the interstate movement of produce? ☐ No ☐ Yes ➤ If yes, give the business's Interstate Produce (IP) Number Q

(previously known as the Victorian or Q Number)

2. *Operational Procedure and Facility Details*

(a) Operational Procedure used in this CA arrangement (refer to list of Operational Procedures)

Reference No.	Title of Operational Procedure
ICA	

(b) Street address of the facility

.....

.....

Postcode

Telephone ( )

Facsimile ( )

Mobile

3. *Authorised Signatories (for Assurance Certificates)*

	Family Name	Given Name/s	Specimen Signature
Certification Controller			
Back-Up Certification Controller			
Additional Authorised Signatories			

Original (yellow) - Consignment Copy
Duplicate (white) - Business Copy

DPI QUEENSLAND DEPARTMENT OF PRIMARY INDUSTRIES

Plant Health Assurance Certificate

ORIGINAL

Consignment Details (Please print)

Certificate Number 9999999

Consignor	Consignee
Name John's Strawberries P/L	Name Strawberry Agents
Address Plantation Road, Atherton QLD 4883	Address Footscray Markets, Footscray VIC 3011

Reconsigned To (Splitting consignments or reconsigning whole consignments)

Name

Address

Method of Transport (Provide details where known)

- [x] Road — Truck/Trailer Registration no. AXD 199
- [ ] Rail — Consignment no.
- [ ] Air — Airline/Flight no.
- [ ] Sea — Vessel Name & Voyage no.

Certification Details (Please print)

Accredited Business that Prepared the Produce	Grower or Packer
Name MB Fumigators P/L	Name John's Strawberries P/L
Address Industrial Road, Atherton QLD 4883	Address Plantation Road, Atherton QLD 4883

IP No. of Acc. Business	Brand Name or Identifying Marks (as marked on packages)	Date Code (as marked on packages)
Q9999	John's Strawberries	690829

Number of Packages	Type of Packages (eg. trays,cartons)	Type of Produce	Authorisation for Split Consignment
2000	Trays	Strawberries	

Date	Treatment	Chemical (Active Ingredient)	Concentration	Duration and Temperature
/ /	☐ Dipping	Dimethoate	400ppm	☐ One min. ☐ 10 sec. then wet for 60 sec.
/ /	☐ Dipping	Fenthion	412.5ppm	☐ One min. ☐ 10 sec. then wet for 60 sec.
/ /	☐ Flood Spraying	Dimethoate	400ppm	10 seconds then wet for 60 seconds
/ /	☐ Flood Spraying	Fenthion	412.5ppm	10 seconds then wet for 60 seconds
/ /	☐ Non-recirculated Spray	Fenthion	412.5ppm	10 seconds then wet for 60 seconds
29/08/96	☑ Fumigation	Methyl Bromide	24 g/m³	Two hours @ 22 C°
/ /	☐ Heat Treatment	☐ Hot Air ☐ Hot Water		min. @ C°
/ /	☐			
/ /	☐ Bananas in a hard green condition with unbroken skin			

Additional Certification

Declaration

I, an Authorised Signatory of the accredited business that prepared the plants or plant produce described above, hereby declare that the plants or plant produce have been prepared in the business's approved facilities in accordance with the business's Certification Assurance arrangement under the *Plant Protection Act 1989* and that the details shown above are true and correct in every particular.

Authorised Signatory's Name (Please print)	Signature	Date
Fred Fumigator	F Fumigator	29/8/96

Form FDU 384 6/96

ATTACHMENT 2

FUMIGATION DOSAGE CHART

Business Name: _____

Interstate Produce No. Q _____

Chamber Identification: _____

Total Chamber Volume: _____ m^3

DOSAGE CHART

Concentration (g/m^3)	Quantity of Methyl Bromide Grams (g)
24	
32	
40	
48	

Prepared by: _____ _____ / /

Printed Name Signature Date

ATTACHMENT 3

FUMIGATION TR[illegible]TMENT RECORD

Owner of Fumigation Facility:				Interstate Produce No.:	Q
Date of Fumigation:	/ /	Chamber ID:		Chamber Volume:	m^3
Fumigator's Name:				QDH Licence No:	
Temperature Readings (°C):				Fumigation Rate:	
Temperature Range (°C):	Maximum Temperature °C	Minimum Temperature °C		Amount of Fumigant Used:	

Grower/Packer Name	Number of Packages	Product Type (eg Banana)	Type of Packages (Cartons, Bins etc.)	Time of Vaporisation	Time of Venting	Chamber Loading (%)	ID Code *(If applicable)*

Comments:

ATTACHMENT 4