



**Australian Government**  
**Department of Agriculture**



# **Morgan Morrow Travel Application**

**Final report**  
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## **I. Executive summary**

The methods by which pigs are euthanized must be legal, effective, practical and humane. Professor Morgan Morrow is a veterinarian who has researched applied euthanasia methods for the past 20+ years whilst working at North Carolina State University and has specialist expertise in the use of carbon dioxide (CO<sub>2</sub>) euthanasia. Funding received from this award supported Dr Morrow to provide information to pig producers and stakeholders on best practice euthanasia, with a focus on CO<sub>2</sub> at meetings in Victoria (Bendigo), South Australia (Adelaide) and Western Australia (Perth) and at the Pan Pacific Pork Expo at the Gold Coast. In addition, Dr Morrow presented at a National forum including industry and regulators on application of CO<sub>2</sub> for mass euthanasia of pigs as an alternative to captive bolt and firearm euthanasia in the event of an Emergency Animal Disease (EAD) outbreak.

Dr Morrow addressed an audience of 24 industry and government representatives from Victoria, NSW, SA, Qld and Tasmania at a forum held at Attwood on 3<sup>rd</sup> March on the topic “Use of CO<sub>2</sub> for on-farm mass depopulation of swine”. The aim of this workshop was to provide a forum for government and industry stakeholders to discuss mass destruction and disposal of pigs in the event of an emergency disease outbreak. It is anticipated that outcomes of this meeting will input into the next revision of the relevant AUSVETPLAN manual.

An industry seminar “Happy pigs = healthy business” was held in Bendigo on 5<sup>th</sup> March and attracted over 80 pig producers and stakeholders. Dr Morrow was a major presenter on “Pig euthanasia” and managed a demonstration on “Is it time? Deciding when to euthanize”. Following on from this, he presented to a group of approximately 20 pig producers, consultants, university students and researchers in Roseworthy on 11<sup>th</sup> March on “Pig and herd euthanasia”. On 13<sup>th</sup> March, Morgan was taken by Hugh Payne to the Medina Research Station where he discussed the humane killing of pigs with research staff. On 14<sup>th</sup> March, he met with veterinarians from Portec Veterinary Services, technical staff from West Vet supplies and Westpork representatives. Finally, Morgan attended the CRA Partnership Program Conference on May 20 to approximately 170 delegates, addressing the topic – Gas Euthanasia and Aggressive/Conservative Criteria for Euthanasia. On May 22, he conducted three animal health work-shops at PPPE working with producers to develop a euthanasia decision tree. This was part of a practical/hands-on euthanasia station that also included aspects of gas and captive bolt euthanasia. These sessions were attended by approximately 60 producers across the course of the day.

The potential industry benefits of this travel grant to the Australian pig industry are:

- Providing information and facilitating discussion on the topic of euthanasia to hands-on pig carers and their advisers, including the decision-making process, key considerations, welfare and economic implications.
- Potential input into the next revision of the relevant AUSVETPLAN manual.



*Photo: Dr Morgan Morrow*

## 2. Background to project

The methods by which pigs are euthanized must be legal, practical, humane and effective. However, blunt trauma (commonly used to euthanize piglets on farm) looks awful and the average consumer cannot comprehend the positive aspects of this method of euthanasia and this has the potential for adverse perceptions of the industry. There is increasing interest in the use of CO<sub>2</sub> for euthanasia of piglets in Australia, however there is debate among scientists on the humaneness of this approach. Dr Morgan Morrow has undertaken research and extension on pig euthanasia for the past 20+ years at North Carolina State University and has a special interest and expertise in CO<sub>2</sub> euthanasia of pigs and the application of this to mass euthanasia in the event where stamping out of an EAD is required.

## 3. Objectives

The objectives of this project were to:

1. Hold three workshops (Victoria, SA, WA) targeting pig producers and their advisors on on-farm euthanasia of pigs.
2. Hold one policy meeting to provide input into mass euthanasia of pigs in the event of an EAD.
3. Attend and present at the PPPE in May.

## 4. Methodology

The details of Dr Morgan's travel are presented in Table I.

*Table I: Itinerary of Dr Morgan Morrow.*

Date	Event	Details
1 <sup>st</sup> March	Arrive in Melbourne	
3 <sup>rd</sup> March	Policy meeting Attwood	"Invitation-only" event attended by 24 industry and government representatives
5 <sup>th</sup> March	"Happy pigs = healthy business"	Open industry seminar attended by 80+ pig producers and their advisors in Bendigo
11 <sup>th</sup> March	Euthanasia seminar	Attended by 20+ producers, advisors, researchers and students in Roseworthy
13 <sup>th</sup> March	Medina Research Station	Meeting with piggery staff at Medina Research Piggery
14 <sup>th</sup> March	Portec Veterinary Service	Meeting with Portec Veterinary staff, West Vet and Westpork
20 <sup>th</sup> May	CRA conference	Presentation to 170+ delegates at the CRA conference
22 <sup>nd</sup> May	PPPE	Practical demonstration to 60+ delegates at the PPPE

## 5. Results

### 5.1 Destruction of Pigs Stakeholder Workshop

When an emergency pig disease outbreak, such as foot-and-mouth disease (FMD), occurs, it will be necessary to rapidly and humanely depopulate and dispose of infected and susceptible pigs to limit viral replications and disease spread. Methods other than handling individual pigs will be required to achieve the necessary rapidity. Suitable and practical on-farm methods will require depopulating large numbers of pigs at a time outside confinement buildings. The process must be easily implemented

with readily available materials and equipment, while providing for the safety and well-being of personnel and the welfare of the animals.

The current AUSVETPLAN manual “Destruction of animals” (Version 3.1) describes blunt trauma, gassing with carbon dioxide and intracardiac barbiturate injection as methods for euthanasia of small pigs (<5kg liveweight); captive bolts and firearms are options for larger pigs housed indoors and in paddocks, respectively. Methods of restraining animals described include manual handling (small pigs), confinement in temporary pens and/or in single-deck livestock transport. This manual is likely to be reviewed within the next 12-24 months (P Dagg, personal communication).

The aim of this workshop was to provide a forum for government and industry stakeholders to discuss mass destruction and disposal of pigs in the event of an emergency disease outbreak. It is anticipated that outcomes of this meeting will input into the next revision of the relevant AUSVETPLAN manual.

Dr Morrow addressed an audience of 24 industry and government representatives from Victoria, NSW, SA, Qld and Tasmania at a forum held at Attwood on 3<sup>rd</sup> March on the topic “Use of CO<sub>2</sub> for on-farm mass depopulation of swine. The program for the event is presented in Table 2.

*Table 2: Workshop program: Destruction of Pigs Stakeholder Workshop, 3<sup>rd</sup> March 2014*

<b>Time</b>	<b>Item</b>
10:00	Introductions
10:15	Review of AUSVETPLAN “Destruction of Animals” (Richard Rubira)
10:30	Controlling and stamping out exotic diseases in pigs – the Australian perspective (Dwane O’Brien, PVO Exotic Diseases, DEPI)
11:00	Use of CO <sub>2</sub> for on-farm mass depopulation of swine (Discussion led by Morrow) Controlling and stamping out exotic diseases in swine – the US perspective. (Morrow) CO <sub>2</sub> euthanasia <ul style="list-style-type: none"> <li>• CO<sub>2</sub> application requirements for on-farm mass depopulation of swine in a disease emergency.</li> <li>• How to vaporize liquid CO<sub>2</sub> inexpensively and using readily available local supplies (Bunnings).</li> <li>• Does one rely on stockpiling the necessary equipment or depend on local suppliers, e.g., Bunnings (Home Depot in the US) contracts to supply the CO<sub>2</sub> etc.</li> </ul>
12:30	Lunch
13:00	General discussion – Where to from here? (take-home messages for industry and government) <ul style="list-style-type: none"> <li>• Best options for euthanasia of pigs of varying sizes</li> <li>• Best options for restraint of pigs of varying sizes for euthanasia (indoor and outdoor herds)</li> <li>• Best options for disposal of carcasses</li> </ul>
15:00	AOB and Close

## 5.2 Industry seminars

An industry seminar “Happy pigs = healthy business” was held in Bendigo on 5<sup>th</sup> March and attracted over 80 pig producers and stakeholders. Dr Morrow was a major presenter on “Pig euthanasia” and managed a demonstration on “Is it time? Deciding when to euthanize”. The program for this seminar is presented in Table 3.

Table 3: Seminar program – “Happy pigs = healthy business”

Start	Topic	Speaker
0930	Registration	
1000	Welfare and the law	Stephanie Andreato, DEPI
1045	Piglet euthanasia	Morgan Morrow
1100	Concurrent demonstrations: · PigCare records · Is it time? Deciding when to euthanase. · New piglet euthanasia alternatives	Trish Holyoake Morgan Morrow Rachael Holmes
1230	Lunch	
1315	The importance of good welfare in retail	Mr Rob Cumine, Coles
1400	Tools and tricks for achieving high reproductive output on US swine farms	Tim Safranski
1445	Concurrent demonstrations · CO2 euthanasia · Captive bolt euthanasia · Transporting pigs	Erin Borrow Hong Lin Trish Holyoake
1600	Summary and close	
1615	Networking	



Photo: Attendees at the “Happy pigs=healthy business seminar” held in Bendigo on 5<sup>th</sup> March 2014.



*Photo: Hong Lin and Erin Burrow (CRA) present at the “Happy pigs=healthy business” seminar held in Bendigo on 5<sup>th</sup> March 2014.*



*Photo: Trish Holyoake (DEPI) presents at the “Happy pigs=healthy business” seminar.*

Following on from this, he presented to a group of approximately 20 pig producers, consultants, university students and researchers in Roseworthy on 11<sup>th</sup> March on “Pig and herd euthanasia”.

On 13<sup>th</sup> March, Morgan was taken by Hugh Payne to the Medina Research Station where he discussed the humane killing of pigs, particularly the use of carbon dioxide with research staff. Dr Morrow provided valuable information for presentation to DAFWAQ’s Animal Ethics Committee with the intention of obtaining approval to use a “Euthanex Box” for the emergency killing of experimental animals at Medina. He also discussed the findings of research on attitudes to the use of bunt trauma that indicated the aversion of some staff to this method of humane killing. Criteria for euthanasia of pigs were also discussed at length. Dr Morrow’s visit was received enthusiastically by the staff who later commented that they gained significant new information during this visit.

Veterinarians from Portec Veterinary Service, technical staff from West Vet supplies and Westpork representatives attended an informative and interactive discussion session with Dr Morrow on 14<sup>th</sup> March. The major topic of discussion was the use of CO<sub>2</sub> for mass euthanasia in the pig and poultry industries. Those in attendance gained valuable insight into how piggeries in America coped with emergency mass euthanasia when faced with a disease outbreak situation. As poultry vets, Portec were also very interested in the concept of foaming as a method of mass depopulation of poultry farms. Being prepared in the face of such a disaster means having access to the appropriate

equipment and supplies. Therefore, it is up to the industry to ensure that its farms are prepared for the worst case scenario. This would minimise the requirements of conventional methods of euthanasia (blunt force trauma, captive bolt) which takes too great a toll on staff physically and emotionally in a disease outbreak situations. Attendees at the afternoon session greatly appreciated Dr Morrow's insights into euthanasia in pigs and thanked him kindly for making the trip to WA.

Finally, Morgan attended the CRA Partnership Program Conference on May 20 to give a 1hr presentation to approximately 170 delegates, addressing the topic – Gas Euthanasia and Aggressive/Conservative Criteria for Euthanasia. The CRA Partnership Program Conference delegates were comprised of approximately 100 piggery owners/managers/personnel, 20 allied industry (nutritionists, feedmills, agri-advisors etc) and 50 combined sponsors, speakers and CR-Group staff.

On Thursday, May 22, he gave three animal health work-shops at PPPE working with producers to develop a euthanasia decision tree. This was part of a practical/hands-on euthanasia station that also included aspects of gas and captive bolt euthanasia. These demonstrations were attended by approximately 60 producers across the course of the day.

Elsewhere from Sunday May 19-Friday May 23, Dr Morrow had informal contact with CRA Partnership Program Conference and PPPE delegates.

## **6. Discussion**

It is vital that Australia's pig industry keep abreast of research and extension happening overseas. We were fortunate that Dr Morrow was able to take extended sabattical leave in Australia to presenting on and facilitating further discussion around the topic of euthanasia, the decision-making process, key considerations, welfare and economic implications. In addition, the practical nature of the PPPE work-shops gave people an opportunity to work together in a scenario-style situation. Morgan's various interactions with producers, veterinarians, regulators and other industry stakeholders over the duration of his visit to Australia have been invaluable.

## **7. Implications and recommendations**

- It is anticipated that outcomes of the "Destruction of pigs" stakeholder meeting will input into the next revision of the relevant AUSVETPLAN manual.
- Information provided by Dr Morrow to producers, veterinarians, researchers and students on euthanasia, with a particular insight into CO2 euthanasia will lay the foundation for future application and research into this topic.

## **8. Intellectual property**

Nil