Australian Association of Bush Regenerators

Working with natural processes

Safe chemical use for bush regenerators

Useful tips to improve bush regeneration practitioner use of chemicals — drawn from already-published sources

(AABR does not provide advice on the use of chemicals)

This information has been gleaned from a range of official sources of advice on best practice herbicide use by AABR's *Chemicals in Biodiversity Management Working Group*.
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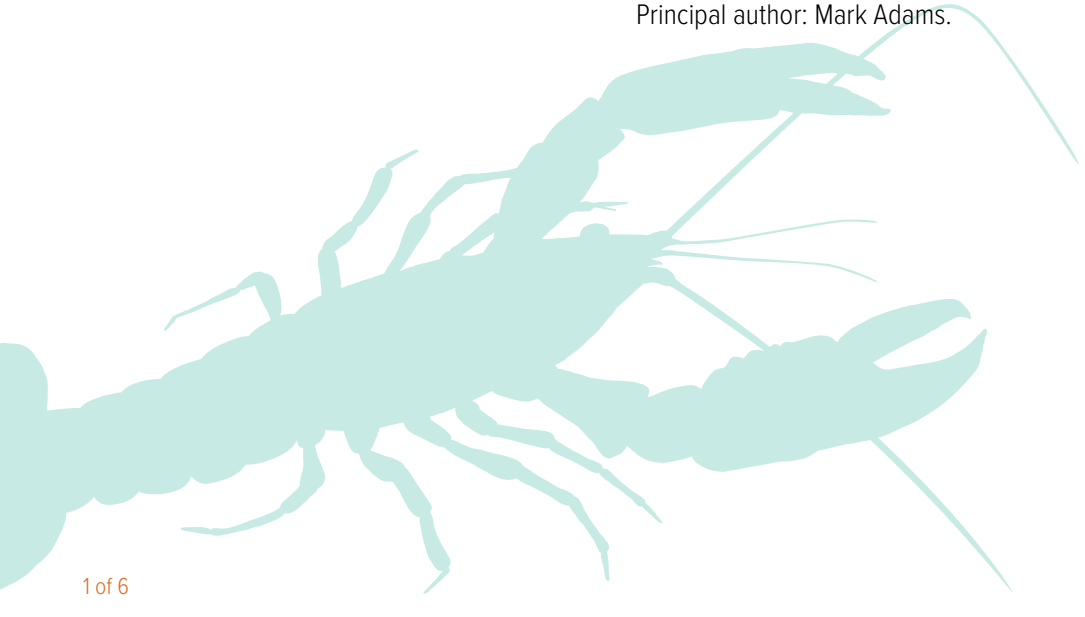

The Australian Association of Bush Regenerators (AABR)

AABR promotes the study and practice of ecological restoration, and fosters and encourages effective management of natural areas by qualified people, based on sound ecological principles. Join us today to help promote good work practices in natural areas, strengthen our industry, and network with like minded people.

AABR Members include bush regeneration professionals, volunteers, natural area managers, policy makers, contractors, consultants, nursery people and local, state and Commonwealth government officers – and lots of people who just love the bush and want to see it conserved.

AABR's Chemicals In the Management of Biodiversity (CIMB) Working Group aims to:

- gather information from parties affected by a ban on Glyphosate, such as AABR members and local government
- collate information on the science behind chemical use to manage biodiversity
- provide information on:
  - the impacts of a glyphosate ban, or restrictions, on the control of weeds
  - the health and safety implications of chemical use in managing biodiversity
  - the experiences of other councils and organisations that have already restricted or banned glyphosate and the chemical alternatives being used
  - the biodiversity and conservation impacts of glyphosate and other herbicide restrictions.
  - weed management plans that show herbicides are a necessary, but minor part of conservation efforts or regeneration, with herbicide decreasing to minimal levels over time when implementing Integrated Pest Management systems.

Information sheet design: Little Gecko Media.

RESTORATION DECADE ALLIANCE

Australian restoration organisations supporting the United Nations **DECADE ON ECOSYSTEM RESTORATION** 2021–2030

AABR is a proud member of the Restoration Decade Alliance, a network of non-profit environmental restoration groups in Australia who have joined forces to support the goals of the UN Decade on Ecosystem Restoration.

We support THE ULURU STATEMENT

AABR acknowledges Australian Aboriginal and Torres Strait Islander peoples as the First Nations of this continent and recognises their custodianship and continuing connection to its land, waters and community.

We pay our respects to the Elders past and present and future, for they hold the memories, traditions, culture and hopes of Indigenous peoples across the nation.

How to use this list

Start here when considering chemical options for bush regeneration. The first step is always to ask: do we need a chemical at all?

Mechanical, manual, thermal, and ecological methods often work well at low weed densities. Chemicals may be warranted for large infestations or where non-chemical methods are impractical, but only with careful product choice, application, and hygiene to protect people and Country.

1 Decide if a chemical is necessary or highly desirable

Non-chemical options include hand removal, cutting/slashing, digging with hoes or weed-pullers, targeted burning, steaming, and shading/mulch. Use chemicals **only** where integrated weed management shows they add value (e.g., a wide range of circumstances including any large sites, dense woody weed thickets, resprouting species, follow-up control after primary knockdown, fire, or enhancing efficiencies under budget constraints).

In some situations, applying herbicide to control short-lived annual weeds, mainly for aesthetic reasons, can actually hinder the establishment of more stable, long-lived native perennials. These native species have the potential to outcompete the annual weeds naturally and develop a vegetation structure and composition that reduces the need for continued herbicide use.

Example: *Polygala myrtifolia* Seedlings can be hand-pulled when the soil is moist, and larger plants can be levered out. Cutting the plant below the first node will kill it, so herbicide is not required with this method. In cases of very old plants, additional control value can be achieved by cut-stumping, cutting the plant to ground level and immediately applying herbicide to the stump, to prevent reshooting.[1]

2 Know your legal & safety basics (Australia)

Follow the label In Australia, product **labels are law** and include spray-drift, PPE and aquatic-use instructions set or overseen by the APVMA.[2]

Wind & inversions Typical label wording: *Do not apply unless wind is between 3 to 20 km/h; do not spray during hazardous temperature inversions*. Plan for droplet size and nozzles to minimise drift.[2]

Respect SDS Safety Data Sheets explain hazards, first aid, storage, PPE and disposal — keep current SDS on hand.[3]

Near water Aquatic organisms are sensitive to many herbicides. Only use products registered for the specific aquatic/near-water situation and follow buffer zones on the label.[4]

3 Choosing a herbicide (fit for purpose)

All herbicides contain active constituents (ingredients). They are the chemicals that kill the target weeds. Below are the main categories of herbicides.

A Broad-spectrum systemic herbicides

Non-selective, translocated products (most commonly **glyphosate**) control a wide range of weeds with relatively low soil persistence when used as directed. Select shielded/low-drift nozzles and protect desirable vegetation from contact.[5]

B Soil-active or residual systemic herbicides

Some actives (**metsulfuron-methyl, picloram**) can be taken up by roots and persist from months to a year depending on rate and conditions — raising off-target risk for nearby native plants. Check plant-back periods and avoid use where native root zones overlap.[6]

Triclopyr + picloram mixtures increase woody-weed control but add soil residual risk (picloram is the issue). Use only where appropriate and heed label plant-back.[7]

C Pre-emergent herbicides

Form soil barriers that stop seedling establishment (root/coleoptile uptake). **Generally unsuitable in bush regeneration** because they also suppress native recruitment and may persist on the soil surface.

D Selective herbicides

In simple terms selective herbicides can be either broadleaf specific (for broadleaf weeds) or grass specific (for grassy weeds). The degree of selectivity also varies depending on the particular active constituent and the rate used. Always follow the label.

For example, **Clopyralid (Group 4)** is a **synthetic auxinic herbicide** that mimics the natural plant hormone auxin, disrupting normal growth processes by overstimulating growing points, damaging vascular tissue, and interfering with cell division, ultimately causing plant death.

Sometimes, however, It is not always completely clear which groups of grasses or broadleaved plants a selective herbicide will affect. For example, the label of Clopyralid states it targets many broadleaf weeds (e.g. in the plant families in Aeraceae and Fabaceae) yet some practitioners find that it also affects species in Aisoacea and Polygonaceae and that, although it may not affect **some** species in Myrtaceaea, Proteaceae and Epacridacea, uncertainty remains about its affect on all species in these and other families. It is also clear that selectivity varies by species and rate. (Always confirm on the label for your target weeds and site.[9])

Vapour drift risk Ester formulations of some actives (e.g., certain triclopyr esters) can volatilise under high temperatures or inversion conditions — avoid such conditions per label.[2]

4 Pest (vertebrate) chemical controls (overview)

Use vertebrate toxins only within state/territory rules and training frameworks.

1080 (sodium fluoroacetate) & PAPP (para-aminopropiophenone) are used for control of foxes and rabbits. It requires specific user training and licensing/endorsement (e.g., ACUP/COL, course 22661VIC in Victoria). Requirements vary by jurisdiction — check your state authority.[9]

Sodium nitrite (HOGGONE®) for feral pigs is delivered in pig-specific bait boxes; acts quickly via methaemoglobinaemia and has lower secondary poisoning risk. Follow national SOPs and label instructions.[10]

Rabbit warren fumigation commonly uses aluminium phosphide (releasing phosphine). It's highly toxic to humans and wildlife — accreditation, SDS access, and strict procedures are mandatory.[11]

Pindone (anticoagulant bait for rabbits) — It is used for rabbit control in areas where 1080 is unsuitable. Pindone poses a higher risk to non-target species, including pets and some native wildlife, so baiting programs must follow state regulations and approved animal welfare guidelines. Always use in accordance with label directions, under supervision of trained or authorised personnel.[12]

5 Application methods and field hygiene

Small-scale, selective work

Wick wipers/brushes/injectors Useful for precision work (e.g. cut and paint and basal bark application situations); note that concentrations are often higher — control splashback and wear label-specified PPE.[13]

Backpack/hand sprayers Ideal where terrain is rough and precision matters. Daily leak checks (lids, seals, lances, hoses), nozzle choice for coarse droplets in breezier conditions, and keeping carried volumes within safe ergonomic limits reduce exposure risk. Follow label drift instructions (3 to 20 km/h, no inversions).[2]

Vehicle-mounted spray units

Maintain hoses/reels to prevent kinks, leaks and hose-off-reel failures; assign a spotter where public access is possible and use **signage and temporary exclusion** as required. Good UHF/radio comms are essential in public areas.[4]

Near water

Use only products **registered** for aquatic/near-water applications and comply with buffer distances and nozzle/droplet requirements to protect aquatic biota.[4]

6 Personal safety and PPE

Minimum PPE is specified on the label and SDS for each product; this is the legal baseline, not a ceiling. Typical ensembles include chemical-resistant gloves/boots, coveralls, eye/face protection, and (where required) respirators. Replace or decontaminate PPE per SDS.[14]

Work hygiene Avoid handling taps, vehicle interiors, gate latches, phones, and tools with contaminated gloves. Establish clean/dirty workflows; wash exposed skin promptly; launder workwear separately.[15]

Public safety Display **pesticide use signage** and, where feasible, restrict access during spraying, in line with label and local requirements.[4]

Disposal of leftover chemical solutions Mix only what you need, good planning is the best way to minimise disposal problems.

7 Safe disposal of unused chemicals and spray mixes

Good planning is the best way to prevent chemical waste. Always **mix only what you need** based on the area to be treated and the label rate. If leftover spray remains, use it legally by **applying to another target area listed on the label** — never increase rates or apply on non-target plants to use up excess.

Do not pour leftover chemical or rinsate onto soil, into drains, or near waterways. Even small quantities can contaminate water and harm aquatic life. Instead:

- **Triple-rinse containers** immediately after emptying: add water (about 20% full), shake, pour the rinse into the spray tank, and repeat three times.
- After rinsing, **puncture or crush containers** so they can't be reused, and recycle through programs such as **drumMUSTER**.
- For **unwanted or expired products**, contact **ChemClear** or your local hazardous waste collection facility for safe disposal.
- **Rinse spray equipment** in a contained wash-down area away from drains or watercourses. Use the rinsate in the next compatible mix if permitted by the label.
- Keep **records of disposal and wash-down** locations to ensure compliance and environmental accountability.

Always follow **label directions** and **Safety Data Sheet (SDS)** instructions for disposal and refer to your **state or territory EPA** for local requirements.

8 Record-keeping and continuous improvement

Document product, batch, rate, weather (including wind speed/direction, inversion risk), nozzle/droplet size, treated area, PPE, incidents, and follow-up results. This supports compliance and improves future control programs.[2]

Schedules of poisons

The below table provides a concise outline of information (already published in Australia) on "Scheduled poisons". It summarises authorisations, supply/use restrictions, and the label signal headings you'll see on ag/vet chemical products (and other poisons). The focus is on matters relevant to bushland operations, flagged where state/territory law adds extra controls.

How to read this table The Australian government's Poisons Standard **(SUSMP)** sets national schedules; **states/territories** turn those into legal controls on supply, possession and use. Always check the **product label** (it must carry the schedule signal heading) and your **state rules** for who may buy/use a given schedule. See the Therapeutic Goods Administration (TGA). *Poisons Standard and scheduling of medicines and chemicals*.[16]

Legend & labelling Agricultural chemical labels must show the **correct signal heading** from the current Poisons Standard on the **main panel** (e.g., "CAUTION", "POISON", "DANGEROUS POISON"), and these determine baseline packaging and warning requirements.[17]

State/territory authorisation examples you're likely to encounter

Schedule 7 vertebrate poisons (1080 & PAPP):

- **National** Classified S7 in the Poisons Standard.[20]
- **Victoria (example)** Retail supply only to licensed/accredited persons; age limits, storage, and record-keeping specified.[21]
- **WA (example)** Chief Health Officer "Section 72" notices impose conditions on both suppliers and users (licences, baiting conditions, records) for 1080, PAPP, strychnine.[22]
- **SA/NSW (examples on TGA page** S7 ag/vet chemicals can only be purchased by licence holders or chemically accredited users (see your local Controlled Substances/Pesticides regs).[23]

All schedules (control of use):

- The **APVMA** regulates **up to the point of sale**; **states/territories regulate use** (e.g., user training/accreditation, record-keeping, notification/signage, buffer zones near sensitive areas). Always pair the **national schedule** with your **state control-of-use rules**.[24]

Practical tips for field teams

Don't assume a chemical's schedule from the active alone. The **formulation** and **concentration** determine the schedule shown on the **label** — use that as your source of truth. (APVMA labels must reflect the Poisons Standard.)[17]

Build your SOPs around the highest schedule you handle. If your toolkit includes any **S7** product, expect licensing, secure storage, usage logs, and notification/signage requirements to apply, and plan training/permits early.[23]

Schedule	Signal heading on label	Who may SELL / SUPPLY	Who may BUY / POSSESS / USE	Typical restrictions (high-level)	Notes for bush regeneration
S2 Pharmacy Medicine	(no ag/vet use)	Pharmacists	General public (pharmacist advice)	Pharmacy-only; pack/label controls	Not generally relevant to bush work.[16]
S3 Pharmacist Only Medicine	(no ag/vet use)	Pharmacists (must provide advice)	General public (with pharmacist advice)	Pharmacy-only; no prescription; counselling required	Not used in weed control.[16]
S4 Prescription Only Medicine	(varies)	Pharmacists/vets on prescription	Patients/animal owners with valid prescription	Prescription, record-keeping, storage	Some veterinary poisons fall here, not routine for bush regen crews.[16]
S5 CAUTION	CAUTION	General retailers licensed where required	General users (subject to state control-of-use)	Packaging, warning statements, basic storage; label directions legally binding	Many lower-risk herbicide formulations are S5. Control-of-use (training, records) may still apply in your state. Check label schedule.[17]
S6 POISON	POISON	Licensed ag chem suppliers	Trained/competent users (state rules vary)	Stronger warnings, first-aid, child-resistant closures; sale/use subject to state controls	Many moderate-hazard herbicides are S6. Expect tighter storage, PPE and sale conditions than S5.[18]
S7 DANGEROUS POISON	DANGEROUS POISON	Restricted: supplier and purchaser licensing/accreditation required	Restricted: only licensed/accredited users; specific records, secure storage	Strict licensing, sale registers, age limits; signage; possession/use limited to permitted purposes	Vertebrate toxic agents (e.g., 1080/PAPP) are S7. States impose extra conditions (licences, endorsed training, baiting rules). Plan well ahead for approvals.[17]
S8 Controlled Drug	(health sector)	Authorised health professionals	Authorised persons only	High-security storage, permits	Not applicable to weed/pest control operations.[19]
S9 Prohibited Substance	(prohibited)	Not permitted	Prohibited to possess/use except under permit for research/analysis	Prohibition except very limited approvals	Not applicable to field ops.[19]
S10 Substances of such danger to health as to warrant prohibition of sale, supply and use	(prohibited)	Prohibited	Prohibited	Prohibited nationally	If a substance you're considering is S10, it cannot be used.[19]

Key sources (for your policy folder)

TGA — Poisons Standard (SUSMP) what schedules mean and how they're maintained.[16]

TGA — Scheduling policy framework national policy for applying access restrictions; states implement legal controls.[25]

APVMA — Signal headings & labels how S5/S6/S7 map to label signal words and where they must appear.[17]

DAFF/APVMA — Who regulates what APVMA (registration, labels) vs states (control of use).[24]

Examples of state controls — Vic (retail supply requirements for 1080/PAPP), WA (Section 72 notices on S7 poisons).[26]

Schedule list quick reference — QLD Health storage guidance lists S2–S10 definitions.[19]

References

1. South Australian Department of Primary Industries and Regions (PIRSA). *Declared Weeds — Polygala sanguinea-flora (Polygala)*. PIRSA website [Internet]. [cited 2025 Oct 21]. Available from: https://pir.sa.gov.au/biosecurity/weeds/declared-weeds/polygala
2. Australian Pesticides and Veterinary Medicines Authority (APVMA). *Spray drift labelling – Australian labelling codes (ALC)*. Australian Pesticides and Veterinary Medicines Authority website [Internet]. 2024 [cited 2025 Oct 21]. Available from: https://www.apvma.gov.au/registrations-and-permits/apvma-labelling-codes/alc/spray-drift-labelling-alc
3. SafeWork SA. *Safety Data Sheets (SDS) — Exposure to Hazardous Chemicals*. SafeWork SA website [Internet]. [cited 2025 Oct 21]. Available from: https://safework.sa.gov.au/workplaces/chemicals-and-substances/exposure-to-hazardous-chemicals/safety-data-sheets
4. Department of Primary Industries and Regional Development, Agriculture and Biosecurity. *New South Wales Weed Control Handbook: A guide to weed control in non-crop, aquatic and bushland situations*. 8th ed. ISSN 1443-0622. Perth (WA): Government of Western Australia; 2025. Available from: https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0008/1630754/NSW-Weed-control-hanbook8thEd2.pdf (NB:This edition replaces the New South Wales Weed Control Handbook 7th Ed 2018)
5. Australian Pesticides and Veterinary Medicines Authority (APVMA). *Glyphosate*. Australian Pesticides and Veterinary Medicines Authority website. [online] 1 Aug 2024 [cited 2025 Oct 21]. Available from: https://www.apvma.gov.au/resources/frequently-searched-chemicals/glyphosate
6. Thakur N, Sharma N, Kumar S. Metsulfuron-methyl residues in soil and wheat under north-western mid-hill conditions of Himalaya. *Indian J Weed Sci*. 2019;51(3):252-256. Print ISSN 0253-8040; Online ISSN 0974-8164. [cited 2025 Oct 21]. Available from: https://www.isws.org.in/IJWSn/File/2019_51_Issue-3_252-256.pdf
7. Titan AG Pty Ltd. *Titan Picloram + Triclopyr 400 Herbicide (Label, APVMA Approval No. 62484/1207)* [Internet]. HerbiGuide; 2008 [cited 2025 Oct 21]. Available from: https://www.herbiguide.com.au/Labels/PI10TR30_62484-1207.PDF
8. Corteva Agriscience Australia Pty Ltd. *Lontrel® Advanced Herbicide Label (APVMA Approval No. 65587)*. Specialist Sales (pdf) [Internet]. 2022 Mar [cited 2025 Oct 21]. Available from: https://cdn.specialistsales.com.au/wp-content/uploads/2022/03/14132649/Lontrel_Advanced_Herbicide_Label.pdf
9. Victorian Registration and Qualifications Authority (VRQA). *22661 VIC Certificate II in Agriculture — Summary*. Training.gov.au [Internet]. [cited 2025 Oct 21]. Available from: https://training.gov.au/Training/Details/22661VIC/summary
10. Centre for Invasive Species Solutions. *Baiting — HOGGONE® for feral pigs*. PestSmart website [Internet]. [cited 2025 Oct 21]. Available from: https://pestsmart.org.au/toolkit-resource/baiting-hoggone-for-feral-pigs
11. Department of Primary Industries and Regional Development, Agriculture and Biosecurity (NSW). *NSWRAB-SOP4: Diffusion fumigation of rabbit warrens.* NSW Rabbit Vertebrate Pest Committee; March 2022 [cited 2025 Oct 21]. Available from: https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0004/1396741/NSWRAB-SOP4-Diffusion-fumigation-of-rabbit-warrens.PDF
12. Centre for Invasive Species Solutions. *Ground baiting of rabbits with Pindone (NATSOP-RAB003)*. PestSmart website [Internet]. [cited 2025 Oct 21]. Available from: https://pestsmart.org.au/toolkit-resource/ground-baiting-of-rabbits-with-pindone/
13. Australian Pesticides and Veterinary Medicines Authority (APVMA). *Protective clothing*. APVMA website [Internet]. [cited 2025 Oct 21]. Available from: https://www.apvma.gov.au/resources/using-chemicals/using-chemicals-correctly/protective-clothing
14. Victorian Government Department of Health. *Pesticide use and personal protective equipment*. 2025 [cited 2025 Oct 21]. Available from: https://www.health.vic.gov.au/environmental-health/pesticide-use-and-personal-protective-equipment
15. SafeWork NSW. *Safe use of pesticides in non-agricultural workplaces: Code of Practice*. Sydney: SafeWork NSW; [cited 2025 Oct 21]. Available from: https://www.safework.nsw.gov.au/__data/assets/pdf_file/0005/52871/Safe-use-of-pesticides-in-non-agricultural-workplaces-Code-of-practice.pdf
16. Therapeutic Goods Administration (TGA). *Poisons Standard and scheduling of medicines and chemicals*. TGA website [Internet]. [cited 2025 Oct 21]. Available from: https://www.tga.gov.au/how-we-regulate/ingredients-and-scheduling-medicines-and-chemicals/poisons-standard-and-scheduling-medicines-and-chemicals
17. Australian Pesticides and Veterinary Medicines Authority (APVMA). *Signal heading (Ag)*. APVMA website [Internet]. [cited 2025 Oct 21]. Available from: https://www.apvma.gov.au/node/88246
18. Western Australia Department of Health. *Appendix 4: Discussion Paper – Poisons Schedules 5, 6 & 7.* [Internet] Perth: WA Department of Health; [date unknown] [cited 2025 Oct 21]. Available from: https://www.health.wa.gov.au/~/media/Files/Corporate/general%20documents/medicines%20and%20poisons/PDF/Appendix%204%20Discussion%20Paper%20-%20Poisons%20Schedules.ashx
19. Queensland Health. *Guidelines for storage of poisons and prohibited substances*. Brisbane: Queensland Health; October 2022 [cited 2025 Oct 21]. Available from: https://www.health.qld.gov.au/__data/assets/pdf_file/0023/1183541/guide-storage-of-poisons-and-prohibited-substances.pdf
20. Australian Pesticides and Veterinary Medicines Authority (APVMA). *1080*. APVMA website [Internet]. [cited 2025 Oct 21]. Available from: https://www.apvma.gov.au/resources/frequently-searched-chemicals/1080
21. Agriculture Victoria. *Legal requirement for the retail supply of 1080 and PAPP products*. Melbourne: Department of Jobs, Precincts and Regions, Victoria; July 2022 [cited 2025 Oct 21]. Available from: https://agriculture.vic.gov.au/farm-management/chemicals/requirements-for-using-1080-and-PAPP-animal-bait/sale-and-manufacture-of-1080-and-papp-products/Legal-requirement-for-the-retail-supply-of-1080-and-PAPP-products-July-22.pdf
22. Western Australia Department of Health (WA). *Notices issued under Section 72 of the Medicines and Poisons Act 2014*. [Internet]. [cited 2025 Oct 21]. Available from: https://www.health.wa.gov.au/Articles/N_R/Notices-Section-72
23. Therapeutic Goods Administration (TGA). *Australian State & Territory regulatory controls on Schedule 7 poisons*. TGA website [Internet]. 2017 Nov 28 [cited 2025 Oct 21]. Available from: https://www.tga.gov.au/how-we-regulate/ingredients-and-scheduling-medicines-and-chemicals/poisons-standard-and-scheduling-medicines-and-chemicals/scheduling-national-classification-system/australian-state-territory-regulatory-controls-schedule-7-poisons
24. Australian Government Department of Agriculture, Fisheries and Forestry (DAFF). *Chemical regulation — Agricultural and veterinary (agvet) chemicals*. [Internet]. Canberra: DAFF; [cited 2025 Oct 21]. Available from: https://www.agriculture.gov.au/agriculture-land/farm-food-drought/ag-vet-chemicals/regulation
25. Therapeutic Goods Administration (TGA). *AHMAC – Scheduling policy framework for medicines and chemicals*. TGA website [Internet]. 2018 Jan 18 [cited 2025 Oct 21]. Available from: https://www.tga.gov.au/how-we-regulate/ingredients-and-scheduling-medicines-and-chemicals/scheduling-basics-medicines-and-chemicals-australia/ahmac-scheduling-policy-framework-medicines-and-chemicals
26. Department of Jobs, Precincts and Regions (Victoria). *Legal requirement for the retail supply of 1080 and PAPP products*. Melbourne: Agriculture Victoria; July 2022 [cited 2025 Oct 21]. Available from: https://agriculture.vic.gov.au/farm-management/chemicals/requirements-for-using-1080-and-PAPP-animal-bait/sale-and-manufacture-of-1080-and-papp-products/Legal-requirement-for-the-retail-supply-of-1080-and-PAPP-products-July-22.pdf