



**SOUTH AFRICAN WINE AND SPIRIT BOARD**

**Scheme for Integrated Production of Wine**

**Integrated Production of Wine:**

**Guidelines for Cellars**

**6th Edition: July 2009**

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In consultation with the vine and wine industry**

The inherent quality of grapes determined by the genetic characteristics of the cultivars and the application of the IPW guidelines for the farm can be negated by the wrong harvesting, wine making and bottling procedures. Successful wine making and handling requires large capital inputs and high quality manpower. Incorrect application of equipment and chemicals, wasteful use of water and electricity and the dumping of waste products in nature have a negative effect on the environment and on the image of wine. These processes must therefore carry the principles of IPW through to the final product.

The cellar and its immediate environment should project an image of environmentally friendly and food safe production. Wine production will be evaluated according to the following guidelines to determine if wines qualify as IPW-wines. Evaluation starts with harvesting of grapes. Only grapes that qualify for IPW may be used to make IPW-wine and all prescribed records must be kept.

## **1 IPW TRAINING**

To implement IPW successfully and effectively requires thorough knowledge of the principles involved.

- It is therefore compulsory that at least one representative of a cellar that wants to participate in the IPW scheme attends an IPW training course. This person must be in direct control of production or wine making.
- All course attendants will receive a certificate to certify that they have attended an accredited IPW course.

## **2 GRAPE QUALITY**

Rotting or diseased grapes may not be used to make IPW-wines, except in the case of Botrytis infection for production of Special Late Harvest and Noble Late Harvest wines. Certain diseases result in the formation of substances which give wines a bad taste. The more rotten grapes are taken in, the more energy as well as sulphur must be used to ensure that quality wines can still be produced. Less than 5% rotten grapes is considered well, but more than 20% rotten grapes is rated poor.

## **3 ENERGY USE AND CARBON EMISSIONS**

Climate change is probably the most important environmental aspect currently under investigation in the world. Global warming and its long-term effect on the agricultural industry will impact each and everyone. It fundamentally results from the emission of green house gases including carbon dioxide (CO<sub>2</sub>) and methane into the atmosphere. For reporting purposes all green house gas emissions are converted to CO<sub>2</sub> equivalent emissions.

Wineries contribute to greenhouse gas emissions/CO<sub>2</sub> equivalents during the fermentation process and also by using energy for cooling, transport, etc. To ensure that wineries continuously decrease CO<sub>2</sub> equivalent emissions, various records should be kept to benchmark each winery before setting objectives for continual improvement in future.

### **3.1 Harvesting and transportation of grapes**

- During hand and mechanical harvesting maximum care must be taken not to damage grapes and compromise quality.
- To preserve quality, grapes should be harvested at the lowest possible temperatures and standing time should be reduced to a minimum.
- In the case of mechanical harvesting the machine should be set so that damage to grapes is limited and the loss of juice and inclusion of material other than grapes is limited to a minimum.
- Grapes that have to be transported over long distances should be transported under an inert gas such as nitrogen to limit oxidation.
- During transportation to the cellar, grapes must not come into contact with substances not registered for use on grapes in an IPW programme (e.g. pesticides)

or any other substances that may contaminate grapes (e.g. fertilizer, oils, lubricants).

- Decks of trailers or trucks should be of food grade material or coated in an acceptable manner.
- The cellar must keep records of grape temperature for all grape loads taken into the winery.

### 3.2 Carbon Emissions

- The cellar must keep record of monthly energy usage applicable to winery operations (including transport of grapes to the cellar). To measure continual improvement of energy use, the following records are regarded as the most important:
  - Electricity usage (kWh)
  - Diesel usage (Liters)
  - Petrol usage (Liters)
  - Liquid Petroleum Gas (LPG) usage (kg)
  - Any other fuels (e.g. coal, furnace oil, etc.) (kg or Liters)

Above-mentioned records must also be available at smaller wineries.

From the international market, there is increasing pressure to also include the impact on the environment resulting from the production of wine. The main aspect that is focused on is the impact of wine making on global warming and the international market will also consider this impact when wine is sourced. IPW, together with other international role players, developed a suitable carbon dioxide equivalent emission calculation strategy and method to enable individual wineries to make such calculations.

The calculation of a winery's carbon dioxide equivalent emissions is not a legal requirement at present and consequently it is not required for IPW at the moment. Cellars or bottlers are encouraged to calculate their carbon emissions by using the internationally accepted protocol and calculator that is available from the IPW website at [www.ipw.co.za](http://www.ipw.co.za). If this calculation has been done, a bonus mark can be allocated. To make this possible, record keeping is essential.

## 4 IMPLEMENTING & MAINTAINING INFRASTRUCTURE AND EQUIPMENT

- Equipment must be covered with inert materials or be made of stainless steel or other inert material to prevent contamination of wine and to facilitate easy cleaning (e.g. free from cracks).
- Only food grade lubricants may be used.
- Floors should allow free draining, free from cracks and readily cleaned.
- Packaging and storage areas should be maintained to avoid rodent or pest access and a pest control program should be in place. Pest control baits must be clearly marked.
- Toilet facilities with wash basins, soap and hot water (55 degrees Celsius) should be available for use by all staff. These facilities should be well ventilated.
- The winery and storage areas must be well ventilated to avoid undesirable conditions (e.g. humidity, heat build-up, etc.)
- Efficient lighting must ensure safe operation of all equipment and to assist with cleaning.
- Thermometers used in tanks must not contain any mercury. Alcohol or digital types are preferred.
- All pipes, transfer lines and hoses must be stored to allow self draining. They must be flushed with potable water prior to use. Annual analyses of incoming water should provide evidence of its quality and to proof conformance with international standards.
- An equipment and infrastructure maintenance schedule must be in place to ensure the integrity of all equipment and calibrations to avoid any food safety hazards. Small wineries can use invoices for repairs and services as proof.

## 5 SO<sub>2</sub> LEVELS

SO<sub>2</sub>-applications are common to ensure that wines are preserved. Before and after fermentation SO<sub>2</sub>-applications must be restricted and evaluated according to Appendix 5A. Since additions and/or blends can still be made after bulk wines are delivered, the winery/facility which will bottle the final product, will be held responsible for the total SO<sub>2</sub>-level of the wine (and not the initial producer of the bulk wine).

## 6 SUBSTANCES ADDED TO WINE

Use natural precipitants, filter materials and fining agents, free from Genetically Modified Organisms and which are environmentally friendly. Certificates to prove that all relevant substances added to the wine are GMO-free, should be available on file. Only compounds listed in Appendix 5B may be used. All chemicals must be kept in a separate store which complies with the same basic requirements set out in the *Guidelines for the Responsible Use of Crop Protection and Animal Health Products* from AVCASA. These include the separate storage of food grade and other substances, ventilation, storage on pallets (plastic pallets or wooden pallets covered with a plastic sheet), doors with locks and records as proof of balance between usage and purchasing. Wineries must keep record of lot codes on chemicals added to wine for traceability purposes. Also refer to Guideline 6.5 in the IPW Manual.

## 7 COOLING

Cooling is judged according to the type of system used. Cooling systems should not contain substances/gasses that are harmful to the atmosphere and environment - see Appendix 5C.

## 8 WASTE WATER MANAGEMENT

Wastewater is defined as all water used and generated in the cellar. Where cellars dispose of its wastewater into Municipal sewers for treatment, a formal agreement should be provided as evidence to be able to obtain maximum points for Guidelines 8.1 to 8.4. All other cellars should score points according to the following guidelines.

### 8.1 Monitoring amount of wastewater (see Appendix 5D)

- Cellars are legally obliged to determine the quantity of wastewater on a weekly basis and to keep records for auditing purposes. It is therefore important to use an effective water meter.
- It is also important to attempt to separate rain and storm water from wastewater in order to limit the volume of contaminated water. At smaller cellars (generating < 20 ML wastewater per annum) this can ensure that the quantity of wastewater that is contained, qualify to apply for a General Authorisation only, and not for a water license, demanding stricter regulations or requirements.

### 8.2 Monitoring quality of wastewater

Prior to disposal, most cellars store and/or pre-treat their wastewater to re-use it or to reduce extreme variations in composition. The following procedures should be used for taking representative wastewater samples:

- Sample the wastewater monthly at the point where it is disposed of into a catchment dam or onto grass at the depth where it will flow out.
- Take a composite sample (instead of a single sample) composed of equal quantities of at least 5 samples taken just before the dam was filled.
- Sample at least 1,5L wastewater in a glass container and store below 4°C, or as suggested by the chemical laboratory doing the analysis.
- Avoid sampling at times when the inflows are very low, or when rainwater has a diluting effect.
- Keep record of cellar activities at the time when sampling takes place, especially when the total volume at the point of collection, is dominated by one or two processes only.
- Keep records of all other actions taken.

Cellars are legally obliged to analyze the wastewater for the following chemical parameters at an accredited laboratory:

- The electrical conductivity (EC)
- pH
- Sodium adsorption ratio (SAR)
- Chemical oxygen demand (COD)

The chemical composition of wastewater indicates whether the water has potential environmental and/or social impacts when released into the environment. Apart from these elements, juice, wine and lees, which are also sources of organic carbon and inorganic components such as salts, acids and solids, may also end up in the waste stream during the harvest period and contaminate it even further.

### 8.3 Storing wastewater (see Appendix 5D)

- If more than 1 000 m<sup>3</sup> of wastewater is to be stored for disposal purposes on any given day (up to a maximum of 10 000 m<sup>3</sup>/property or up to 50 000 m<sup>3</sup>/wastewater dam system) the water user must register with the Department of Water Affairs.
- If more than 500 m<sup>3</sup> is to be stored on any given day for recycling purposes, it should also be registered (maximum of 5 000 m<sup>3</sup> will be allowed). If more than 50 m<sup>3</sup> wastewater is disposed of in an evaporation pan or wastewater dam system on any given day, it must also be registered (maximum of 1 000 m<sup>3</sup> per day will be allowed).
- The wastewater catchment dams and disposal terrains both have to be situated away from a watercourse, above the 100-year flood line or alternatively further than 100 m from the edge of a water resource or borehole used for drinking water or animal water hole.
- Any dam (including evaporation pans) with a capacity greater than 50 000 m<sup>3</sup> and with a wall that has a vertical height of more than 5 m, is declared as a dam with a safety risk. Such a dam must be registered with the Department of Water Affairs and various control measures exist for the erection and maintenance of such a dam.

Catchment dams: the cellar management must ensure the following:

- Wastewater must be separated from storm and rain water.
- Pipelines for conducting wastewater must be able to handle the maximum volume at any time and must be made of quality material to prevent leakages.
- Catchment dams for wastewater must be able to handle the maximum volume of wastewater at any one time and enough space should be allowed for possible unexpected volumes of wastewater.
- Catchment dams should be large enough so that sufficient time may lapse for the solids to be deposited and breaking down of organic matter may take place before the water is released or used for irrigation.
- Catchment dams should be situated in such a way that there is no contact with storm and rain water.
- Irrigation systems must be designed in such a way that leakages do not occur.

### 8.4 Disposal of wastewater (see Appendix 5D)

- Since untreated wastewater of wine cellars does not qualify for disposal into natural water resources, wastewater must either be treated or irrigated.
- If on any given day a person wants to irrigate wastewater originating from the production activities in a wine cellar, he/she must register as a water user and up to 500 m<sup>3</sup> per day of this wastewater may be irrigated (for crop production, including grazing), provided that:
  - The electrical conductivity on any given day is less than 200 milli Siemens per meter (mS/m)
  - The pH is between 6 and 9
  - Sodium adsorption ratio (SAR) is less than 5
  - Chemical oxygen demand (COD) is less than 400 mg/l

- If the COD value is higher than 400 mg/l but less than 5 000 mg/l, however, irrigation after registration (without a license ,but subject to a General Authorisation) may only be up to 50 m<sup>3</sup> on any given day.
- The registered water user may then only irrigate above the 100 year flood line, or further than 100 m from the edge of a water resource or borehole used for drinking water or animal water-hole, while no groundwater or surface water may be contaminated.
- The registered user must measure the quantity of water irrigated on a weekly, and the quality on a monthly basis at the point just before irrigation. Written records must be kept for inspection by the responsible authority.
- The area of irrigation must be demarcated on a 1: 50 000 topographic map and details provided of the crops under irrigation, irrigation techniques and details of emergency procedures.
- Water logging or damaging of soil, occurrence of flies and mosquitoes, bad odours, secondary pollution, penetration of any surface resources and unauthorised use of water by members of the public must be prevented at all times.
- Solid particles must be removed before irrigation and disposed of efficiently.
- Storm and rain water originating from the irrigation area must be collected to prevent contamination of clean water.
- Water for cooling and cleaning of tanks and other apparatus must be recycled, purified and re-used as far as possible.
- Water may only be treated with environment friendly chemicals.

## **9 DISINFECTANTS AND CLEANING AGENTS**

The cellar and bottling plant must maintain a high standard of housekeeping and only environment friendly and food-safe cleaning agents should be used - see Appendix 5E.

## **10 MANAGEMENT OF SOLID WASTE**

### **10.1 Disposal of solid waste (see Appendix 5F)**

- Skins, stems, pips and lees must be heaped on an impenetrable layer (such as cement, plastic or suitable clay layer) and covered against rain, to prevent organic acids from seeping out and having negative effects on soil and soil water before having broken down sufficiently to serve as compost. In cases where this waste is disposed on compacted clay soil or on a low risk site, proof must be provided (e.g. soil study, orthophoto's, etc.).
- If no storage space is available, it should rather be used as animal feed.
- This waste, as well as used sedimentation substances (e.g. diatomaceous earth and bentonite clay) and filtration material, must be stored temporarily before being removed to prevent bad odors' in the adjacent vicinity.
- Used filtration material and bentonite should be made available for the recovery of alcohol or tartaric acid where possible to prevent soil and water pollution (which occurs when these substances are exposed to the soil too quickly).
- If used filtration material is not sent for recycling, the waste should be taken to a suitable disposal site to be destroyed as soon as possible, to prevent it from becoming a nuisance (e.g. foul odour).
- If synthetic tartaric acid is used, a system for the effective disposal thereof must be in place.
- Packaging material of "dry" stock, excess apparatus and equipment, paint, oils, lubricants and solvents must be recycled or disposed of in an environment friendly way and in accordance to legislative requirements.
- Waste bins must be used to collect all general waste inside the winery and recycled where possible.

**10.2 Cleaning of wastewater dams, pipes and other equipment (see Appendix 5F)**

- Wastewater dams, pipes and other equipment should be cleaned annually as large volumes of sludge are collected in this way. This sludge may only be applied to the soil once the chemical composition thereof has been determined, indicating that it may indeed be applied to a specific piece of land.
- If the sludge contains high concentrations of certain elements, it may influence the soil, water sources and plant performance.
- An attempt should be made to conduct the cleaning operation in the summer months to allow rapid breakdown, thus minimising bad odours.
- The cellar must develop a formal procedure for cleaning wastewater dams and screens.

**11 AMBIENT NOISE**

Noise from pumps, compressors, cooling apparatus and vehicles may cause a nuisance or disturbance to neighbours or neighbouring communities. The specific noise limits for different areas, e.g. urban, suburban or rural, may differ and are also influenced by the time of day when the noise occurs. Noise levels should, therefore, also be determined outside the cellar at the point/-s where noise can cause problems. For this reason, for example, if the noise level of equipment or vehicles outside the cellar exceeds 45 dB, these equipment or vehicles may only be used between 7h00 and 20h00.

**12 PACKAGING MATERIALS & BOTTLING FACILITIES****12.1 Closures and capsules (plastic wastes)**

- Material must be constituted and treated in such a way that it is safe for humans and environmentally friendly.
- Material must be inert.
- Should preferably be made of recycled material, and should also be recyclable or biodegradable.
- Further points are awarded if a recycling programme is in place.

**12.2 Bottles (glass waste)**

- Containers of glass, tins and other synthetic containers (plastic bottles, foil bags, etc.) are evaluated according to the points under 12.1.
- Labels must be safe for humans and the environment, should preferably be made of recycled material, and should also be recyclable or biodegradable.
- Further points are awarded if a recycling programme is in place.

**12.3 External packaging materials and labels (paper waste)**

- Cartons, inner partitions, palettes and plastic coverings are evaluated according to point 12.1.
- Recycled or recyclable packaging material should preferably be used – should be indicated on the packaging material.

**13 BOTTLING FACILITIES (not applicable where only bulk wines are produced)**

Procedures to address the following should be in place:

- Glass breakages in all pallets and cartons should be monitored and recorded. Effective glass removal practices must be implemented to ensure that no glass can be present in the final product. Air or water blasting is not allowed during clean up.
- Broken glass should be collected and recycled as far as possible.
- Bottle breakages on bottling lines must be managed to avoid any contamination and an acceptable bottle breakage clean up procedure should be in place.
- Staff working in bottling areas is not allowed to wear any loose jewelry or accessories. Only clean clothes are allowed. No open footwear is allowed and appropriate protective clothing should be worn.
- Lights in areas where wine can be contaminated need to be covered with Perspex

**F. IPW EVALUATION AND CERTIFICATION: CELLAR****1. REGISTRATION FOR IPW**

Proof of registration is supplied when the annual IPW registration fees are paid.

**2. IPW CERTIFICATE**

An IPW Certificate is issued annually, subject to the following provisions:

- 2.1 All evaluation forms must be completed and handed in, as prescribed.
- 2.2 The qualifying score of 60% or more must be attained.
- 2.3 The following criteria must be complied with:
  - Grapes must be produced according to IPW.
  - No non-permitted residues may be present in the wine.
  - Prescribed record keeping must be up to date.
  - Cellar must have all required written permission/permits/licenses for solid waste and waste water management.
- 2.4 If any of the criteria under 2.3 are not complied with, an acceptable action plan describing the steps to be taken to ensure compliance during the following season, must be submitted with the evaluation forms. The IPW certificate does not guarantee that the cellar complies with all IPW requirements, but that an acceptable action plan is in place to achieve qualification in the near future.

**NOTE: Completion of Appendix 4**

- \* Each cellar must complete Appendix 4 fully.
- \* Cellars, which only make wine and sell it before bottling, only complete items marked with W.
- \* Cellars who do not bottle themselves, must complete points 12 and 13 in conjunction with their bottler and ensure that the bottler is registered for IPW.
- \* Bottlers only complete items marked with B. Cellars who do their own bottling only need to complete one copy of Appendix 4.

Evaluation per item according to guidelines	Good 5	Average 3-2	Poor 0	Total
1 IPW Training W, B				
2 Quality of grapes W				
3. Energy use & Carbon Emissions				
3.1 Harvesting and transportation of grapes W				
3.2.1 Carbon Emissions [X2] W, B				
3.2.2 <b>Bonus points:</b> CO <sub>2</sub> Calculation W, B				
4 Implementing & maintaining Infrastructure & Equipment [X2] W, B				
5 SO <sub>2</sub> -levels (Appendix 5A) [X2] W, B				
6 Substances added to wine (Appendix 5B)				
6.1 Precipitants W, B				
6.2 Fining agents W, B				
6.3 Filter materials W, B				
6.4 Other W, B				
6.5 Store for chemicals W, B				
7 Cooling (Appendix 5C) W, B				
8 Management of waste water (Appendix. 5D)				
8.1 Monitoring waste water quantity [X2] W,B				
8.2 Monitoring waste water quality [X2] W,B				
8.3 Storing waste water [X2] W,B				
8.4 Disposal of waste water [X2] W,B				
9 Disinfectants & cleaning agents (App. 5E) W,B				

Appendix continues....

...Appendix 4 continued	Good 5	Average 2-3	Poor 0	Total
10 Management of solid waste (Appendix 5F)				
10.1 Disposal of solid waste W, B				
10.2 Cleaning of waste water dams, pipes and other equipment W, B				
11 Ambient noise W, B				
12 Packaging material				
12.1 Closures and capsules (plastic waste) B				
12.2 Bottles (glass waste) B				
12.3 External packaging material & labels (paper waste) B				
13 Bottling B				
<b>TOTAL</b>				

Qualifying score for cellar that make wine and bottle: Total of 93 [\*10] points or more out of 155  
 Qualifying score for cellar that only make wine (W): Total of 81 [\*10] points or more out of 135  
 Qualifying score for bottlers (B): Total of 87 [\*10] points or more out of 145

Hereby is confirmed that the evaluation forms were completed and submitted as prescribed, together with any action plans required, if any of the criteria to qualify for an IPW certificate under 2.3 of Section F were not complied with. It is also confirmed that all evaluation forms and action plans from producers have been submitted to the cellar.

\_\_\_\_\_  
Name of cellar

\_\_\_\_\_  
Telephone number

\_\_\_\_\_  
Responsible person

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
SAWIS nr

EVALUATION REGARDING TOTAL S<sub>0</sub><sub>2</sub>-LEVELS (MG/L)

## APPENDIX 5A

<b>Wine type</b>	<b>Good</b>	<b>Average</b>	<b>Poor</b>
Natural dry wine (< 5g/l sugar)	<100	100 - 120	>120
Natural wine (> 5 g/l sugar)	<100	100 - 130	>130
Bottle-fermented sparkling wine	< 60	60 - 80	>80
Fortified wines	<130	130 - 150	>150
Noble Late Harvest	<200	200 - 240	>240

**EVALUATION OF SUBSTANCES ADDED TO WINE BASED ON NEGATIVE ENVIRONMENTAL IMPACT  
APPENDIX 5B**

Least	Less	Most
	<b>Precipitants &amp; fining agents</b>	
Egg albumen	Bentonite (Calsium/Sodium)	
Gelatin	Activated animal/plant charcoal	
Tannin	Polyvinyl-polypyrrolidone (PVPP)	
Pectolytic enzymes <sup>1</sup>	Silicasol	
Ideal milk		
Fish collagen (Isinglass)		
Milk		
Rubigum / Arabic gum		
Casein		
	<b>Filter materials</b>	
Cellulose	Perlite	Diatomaceous earth
	<b>Other</b>	
Malolactic bacteria <sup>1</sup>	Erithorbic acid	Ammonium phosphate
Malic acid	Di-ammonium phosphate	Ion-exchanging resins
Dessert wine	Dimethyl dicarbonate (Velcorin)	Potassium ferro cyanide
Concentrated must	Sulphur dioxide gas –see App. 5A	Potassium sorbate
Wood	Potassium carbonate	Copper sulphate
Caramel	Liquid ammonia	Ammonium bisulfite
Carbon dioxide	Calcium carbonate	Sodium carbonate
Lysozyme <sup>1</sup>	Potassium bicarbonate	Sodium metabisulfite
Must	Calcium alginate	Pimarizine
Sweet reserve	Potassium alginate	Potassium metabisulfite
Grape spirits		Ammonium sulfite
Nitrogen gas		Sorbic acid
Cane or grain sugar <sup>*</sup>		Gold flakes
Tiamine		Calcium hydroxide
Oxygen		Meta tartaric acid
Ascorbic acid		Sodium alginate

...Appendix 5B continued		
Potassium bitartrate		Hydrogen peroxide
Colour extracting enzymes <sup>1</sup>		
Citric acid		
Argon		
Yeasts <sup>1</sup>		
Yeast nutrients (except di-ammonium phosphate)		
Tartaric acid <sup>**</sup>		

\* Only for making of sparkling wine.

\*\* See 10.1

<sup>1</sup> GMO-free certificate must be on file

## EVALUATION OF COOLING SYSTEMS

## APPENDIX 5C

Good	Average	Poor
Ammonia <sup>1</sup> R134a (CH <sub>2</sub> FCF <sub>3</sub> ) R143a (CH <sub>3</sub> CF <sub>3</sub> ) R404A R407C R410A R507A Propylene-glycol	R22 <sup>2</sup> = Freon 22 (CHClF <sub>2</sub> ) MP 39 <sup>3</sup> R409A	R11 (CCl <sub>3</sub> F) Freon = R12 (CCl <sub>2</sub> F <sub>2</sub> ) Diethylene-glycol <sup>4</sup>

- 1 Highly toxic - must remain in a closed system (not harmful to the atmosphere).
- 2 Interim product which will be phased out in time.
- 3 A drop-in blend which will be phased out over time.
- 4 Highly toxic and should not be used near food or drink for human consumption.

## WASTEWATER MANAGEMENT\*

## APPENDIX 5D

Action	Good (5)	Poor (0)
<b>Monitoring waste water quantity</b> <sup>1</sup>	- Effective water meter in use. - Weekly with confirming records.	- Poor monitoring or no records.
<b>Monitoring waste water quality</b> <sup>2</sup>	- Monthly determination of EC, pH, NAV and COD at accredited laboratory with confirming records. - Representative sampling just before disposal/irrigation.	- Longer than monthly or no monitoring.
<b>Storing of wastewater</b> <sup>3</sup>	- Scientific proof needed that containment dam large enough. - Soil study as proof of suitability of soil and that irrigation area is large enough.	- If any of the requirements under "Good" are not complied with.
<b>Disposal of wastewater</b> <sup>4</sup>	- Formal agreement with Municipality in place and compliance - General Authorization from Water Affairs in place and compliance.	- If any of the requirements under "Good" are not complied with.

<sup>1</sup> Where monitoring occurred, but not on a weekly basis, the auditor could decide to award points for average score (2 or 3).

<sup>2</sup> Where monitoring occurred, but not on a monthly basis, the auditor could decide to award points for average score (2 or 3).

<sup>3</sup> Where the scientific proof is not available, but according to the auditor highly unlikely that the size of the area and/or the wastewater containment dam is too small, the auditor could decide to award points for average score (2 or 3).

<sup>4</sup> Where a formal and complete application for General Authorization has been submitted and the winery conforms to all legal requirements, the auditor may decide to award 4 points. Where an application has not been submitted but a formal agreement and commitment to address wastewater management has been submitted to Water Affairs, 3 points can be awarded.

## EVALUATION OF DISINFECTANTS AND CLEANING AGENTS

## APPENDIX 5E

Good	Average	Poor
	<b>Disinfectants &amp; Cleaning Agents</b>	
Anionic and non-ionic		Chlorine compounds
Iodophores		Sodium hypochloride
Peroxy-acetic acid		Sodium formulated
Hydrogen peroxide		Chlorinated alkaline products
Acid anionic compounds		Organic acid formulated (e.g. citric acid)
Calcium- or Potassium hydroxide formulated		
Inorganic acid formulated (e.g. phosphoric acid)		
Ozone		
Quaternary ammonium compounds		

**NOTE:** Ask the supplier or manufacturer of disinfectants and cleaning agents into which of the above chemical categories the product you obtain from them falls. A particular chemical formulation is often marketed under various brand names. Therefore the Material Safety Data Sheets (MSDS) and Certificates of Analysis/Conformance (COA/COC) indicating the chemical composition must be available for all disinfectants and cleaning agents.

## SOLID WASTE MANAGEMENT

## APPENDIX 5F

Action	Good (5)	Poor (0)
<b>Waste management<sup>1</sup></b>	<ul style="list-style-type: none"> <li>- Skins, stems, pips and lees diatomaceous earth, bentonite, spent filter material, sludge from catchment dams etc., must be heaped on an impenetrable layer (such as cement or plastic) and covered against rain. Proof of compaction/impenetrable characteristics of site is necessary.</li> <li>- Recovery of alcohol or tartaric acid where possible.</li> <li>- Determination of chemical composition before applied to soil.</li> </ul>	<ul style="list-style-type: none"> <li>- If any of the requirements under "Good" are not complied with, when it was possible.</li> </ul>

<sup>1</sup> The auditor can decide to award 3 points if storage are in a low risk area