



WINERY AUDITS IN CHILE

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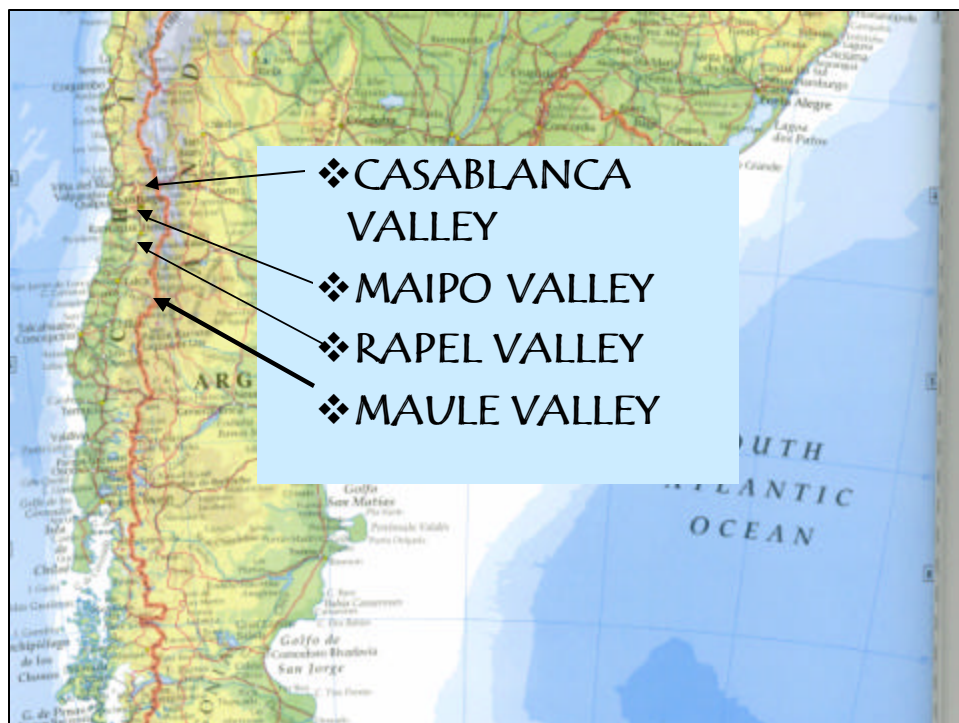
BACKGROUND

- ◇ OVERVIEW
- ◇ CHILEAN AND CANADIAN PARTNERSHIP
 - ❖ INTEC-CHILE
 - ❖ GOLDER ASSOCIATES
- ◇ MANDATE OF GOLDER ASSOCIATES
 - ❖ CONDUCT EMS AUDITS AND PROVIDE GUIDANCE TO INTEC-CHILE

VINEYARDS AND WINERIES AUDITED

- ◇ Concha Y Toro (Vineyard and Winery)
- ◇ Cousino Macul (Vineyard and Winery)
- ◇ Domain Oriental (Vineyard and Winery)
- ◇ Echeverria (Vineyard and Winery)
- ◇ Lourdes (Industrial Winery)
- ◇ Morande (Winery)
- ◇ Torreon de Peredes (Vineyard and Winery)
- ◇ Undurraga (Vineyard)
- ◇ Santa Émiliana (Winery)

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SITE OPERATIONS AUDITED

- ◇ VITICULTURE
- ◇ HARVEST AND MILL
- ◇ VINIFICATION

VITICULTURE OPERATIONS (Vineyard)

- ◇ SOIL MANAGEMENT
- ◇ PESTICIDE MANAGEMENT
- ◇ IRRIGATION / DRAINAGE
- ◇ HARVEST MANAGEMENT
- ◇ STORAGE MANAGEMENT
- ◇ FERTILIZER MANAGEMENT

Vineyard Environmental Aspects

- ◊ Pesticide storage, handling and application techniques
- ◊ Surface water management (natural resource protection and consumption)
- ◊ Handling and storage of hazardous substances
- ◊ Organic and hazardous waste management (empty containers)



Storage of hazardous materials

- ◊ Pesticides
- ◊ Fertilizers
- ◊ Fuels
- ◊ Acids (water treatment)
- ◊ Hazardous waste



Pesticide Application



Water Management & Irrigation





WINERY OPERATIONS

- ◇ Mill and press
- ◇ First fermentation and settling
- ◇ Vinification
- ◇ Transfer
- ◇ Micro filtration (Diatomaceous earth)
- ◇ Bottling
- ◇ Labelling
- ◇ Packaging



Winery Environmental Aspects

- ◇ Water consumption (surface water)
- ◇ Wastewater generation
- ◇ Chemical handling and management (sulphate, acid, nitrogen, etc.)
- ◇ Solid waste generation (filtration –diatomaceous earth)
- ◇ Energy consumption

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Mill and Press



Filtration





By-products Solid waste

- ◊ Diatomaceous earth
- ◊ Wood pallets
- ◊ Empty containers

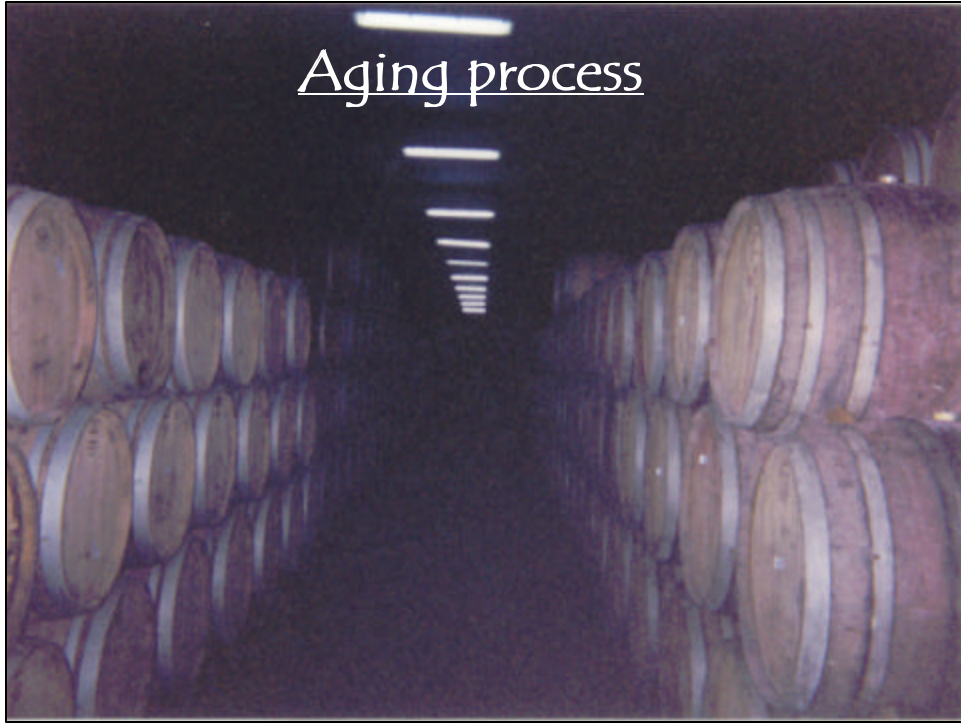
Effluent

- ◊ High organic
- ◊ High nutrients



CASILLERO DEL DIABLO CELLAR
ESTABLISHED IN 1875
Concha Y Toro, Maipo

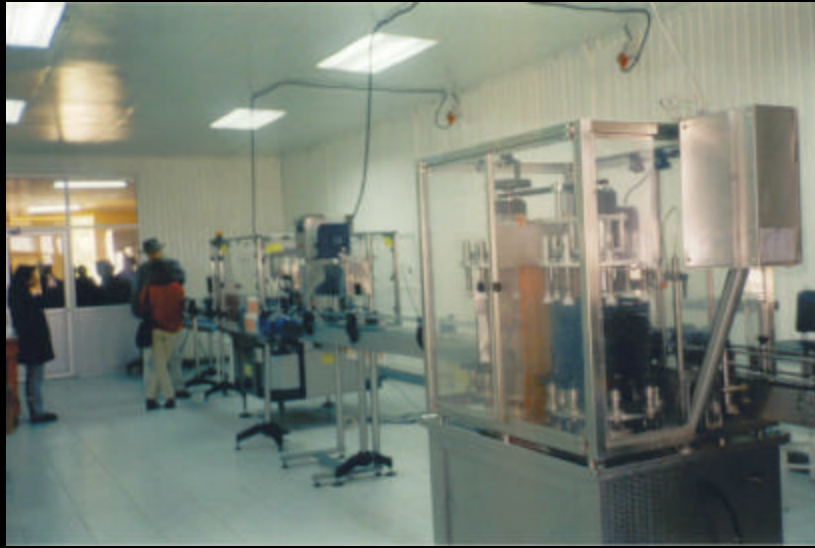
Aging process



Testing



Bottling



INDUSTRIAL PROCESS LOURDES

◇ Concentrated juice process



CONCLUSION

- ◇ One of the wineries has received ISO 14001 certification (February 2001)
- ◇ Three of the wineries have established an EMS and intend to register their EMS (ISO 14001) by the end of 2002

