

1258-1056

application of
high dry
chemicals
in

beverage
plants

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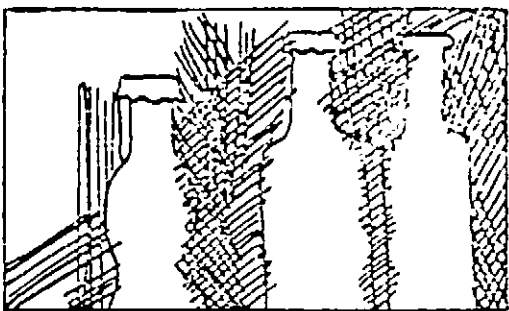
Under the Federal Insecticide,
Fungicide, and Rodenticide Act
as amended for the purpose of
providing for the control of

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1258-1057

TABLE OF CONTENTS

I	CARBONATED BEVERAGES	
	A. Chlorination of Water Supplies	1
	B. Carbonated Beverage Plant Sanitation	1
II	BREWERIES	
	A. Brewery Sanitation	1
	B. Odor and Slime Control in Pasteurizers	2
III	MALTING OF BARLEY	3
IV	WINERIES	
	A. Plant Disinfection and Plant Equipment Sanitation	3
	B. Mold Control	4
	C. Filling and Storage Tanks	4
	D. Sanitizing Press Cloths	4
V	MISCELLANEOUS BEVERAGE PLANTS	
	A. Grape Juice Plants	4
	B. Cider Industry	4



I CARBONATED BEVERAGES

A. CHLORINATION OF WATER SUPPLIES

Problem

Almost without exception, bottlers of quality carbonated beverages find it necessary to further clarify, sanitize and dechlorinate the water supply used in their production. Improved purity and stability of the finished product results from such treatment.

Treatment

Many carbonated beverage plants have wisely installed adequate facilities for the treatment of all water used for carbonation and beverage purposes. Chlorination is accomplished with a hypochlorinator which feeds a 1% available chlorine HTH dry chlorinator solution.

B. CARBONATED BEVERAGE PLANT SANITATION

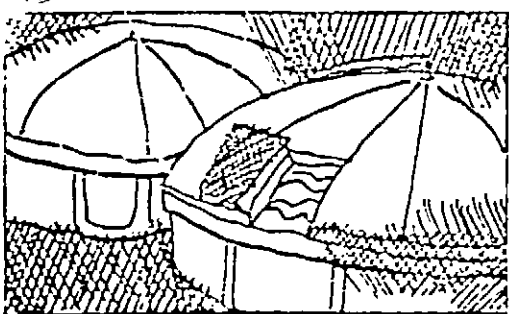
Problem

The quality and taste of carbonated beverages is largely dependent upon sanitation measures instituted by the plant management to prevent bacterial contamination of the beverages.

Treatment

The regular and thorough sanitation of all lines, coolers, filters, tanks, etc., with an HTH dry chlorinator solution is recommended as a reliable and economical way to control bacteria.

1. Before bottling operations begin, a hypochlorite solution of 300 ppm available chlorine strength should pass through all pumps, lines and fillers which will contain beverage ingredients. This solution can be prepared by adding 1 oz. dry HTH to 16 gallons of water.
2. All tanks which hold syrups should be completely cleaned after each bottling operation and thoroughly sprayed with a 300 ppm solution. After a 30 minute contact period, tanks should be rinsed well by hosing with potable water before reuse.



II BREWERIES

A. BREWERY SANITATION

Problem

Today, all brewing authorities recognize that the presence of bacteria may contribute to off-tastes and odors in beer and ale. Consequently, the need for efficient chemical sanitization in breweries is now fully appreciated.

Treatment

1. General Brewery Sanitation — HTH solutions are widely used in breweries for sanitation purposes because of the alkali's dissolving action on proteins, beer stone, slime, yeast and extraneous matter commonly found in lines, tanks, hoses and other brewery equipment.

Sanitizing solutions can be freshly prepared by the brewery at the lowest possible cost.

 - (a) Using a 20 gallon container, dissolve 5 lbs. HTH in 2-3 gallons warm water.
 - (b) Introduce 3 lbs. soda ash and stir until dissolved.
 - (c) Dilute to about 15 gallons with cold water and add 5 lbs. caustic soda. Stir until dissolved and allow to settle.

1258-1087

The above mixture, diluted at a rate of 1 gallon to 10 gallons water, may be used to clean and sanitize stainless steel tile or concrete vats, piping and equipment. Rinse all treated equipment with potable water before reuse. Note: Use only freshly prepared solution.

2. Sanitizing Filter Pulp — Wood pulp is employed as a filtering agent to remove any foreign matter present and to improve the clarity of the beer. The use of HTH solution to wash the wood pulp results in the removal of colloidal deposits, the restoration of the filter mass efficiency and the removal of coloring matter.

The filter mass should be washed in the usual manner. Shut off flow of incoming water if washer is used and run the latter for one hour after first adding 1 oz. dry HTH for each gallon of water in washer. If washer is not employed, stir 1 oz. HTH into each gallon of soak water after adding pulp. Let it remain at 140°-150°F. for period of 10-15 minutes. Then remove the pulp. Rinse pulp with potable water.

3. Cypress Fermenting Tubs — After thoroughly cleaning tub to free it of all surface soil, fill with 500 ppm treating solution (1 oz. HTH to each 10 gallons water). Allow tub to stand overnight, then drain and rinse well with potable water before adding wort.
4. Washing Equipment and False Bottoms — False bottoms may be sanitized by covering them with warm water and sprinkling dry HTH therein at the rate of 1 lb. for each 4 gallons of warm water used. A 15-20 minute contact period is sufficient. To properly sanitize the entire washing apparatus along with false bottoms, it is necessary to first cleanse in the usual manner, then flush all surfaces generously with a solution containing 1 oz. HTH for each gallon of water (5000 ppm). Rinse all treated equipment with potable water before reuse.
5. Malting Floors — Floors around malt tanks should always be thoroughly washed down. At least once a week it is advisable to flush wooden floors with a solution containing 1 oz. HTH for each 2 gallons of water (approximately 2500 ppm). This mixture may also be used to spray the walls of malting spaces every seven days. Such practice will prevent the formation of any offensive odors and molds.
6. Aging Cellars — The concrete walls of aging cellars should be sprayed regularly with a solution containing 1 oz. HTH for each gallon of water (approximately 5000 ppm) to kill mold and mildew growths (non-residual) and control odors.

3. ODOR AND SLIME CONTROL IN PASTEURIZERS

Problem

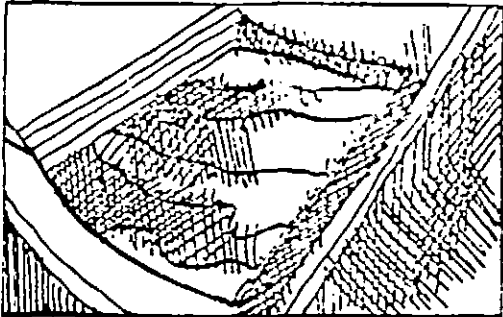
Brewery pasteurizers, particularly those of the "pocket" type handling glass bottles, tend to collect slime and develop offensive odors due to spoilage of beer finding its way into the pasteurizer bath through breakage.

Treatment

Many breweries are at present employing inhibiting chemicals. The use of HTH solutions for the control of slimes and odors in pocket type pasteurizers has proven to be effective.

Application is made in the form of HTH solutions of about 1% available chlorine (1 lb. to 8 gallons water) by means of a hypochlorinator feeding into the water supply line for the pasteurizer. The hypochlorinator is adjusted to feed at a rate which will provide a dosage of 0.5 to 1 ppm available chlorine at the pasteurizer overflow. When refilling pasteurizers after draining and cleaning, hypochlorinator should be used to bring chlorine residual of fresh water to proper residual.

1217-1066



III MALTING OF BARLEY

Problem

Malting of barley is the alteration of the barley kernel by artificial germination to convert the natural starches and proteins into soluble form suitable for fermentation. The aim of the Malster is to produce a product of uniform color, enzyme content and with uniform fermentation characteristics. Wide variations in growing conditions, soil conditions and other natural conditions affect the malting of the various barleys to a marked degree and thus complicate the problem of producing a product of uniform quality.

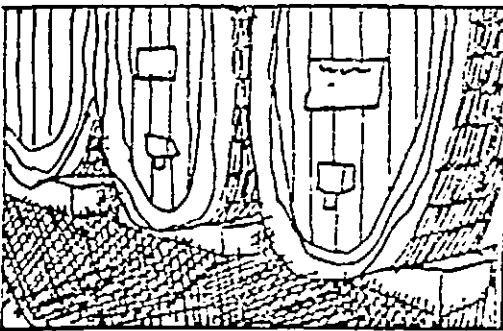
Treatment

The use of HTH in the steeping bath has already proven to be of value in maintaining a high rate of germination. Further investigation has indicated that acceptable germination can be obtained from dormant or sub-standard barleys by proper application of HTH to the steep bath.

The presence of HTH in the steep water is known to be of value in disinfecting both the barley and water supply for the removal of troublesome bacteria and molds. While this is an important improvement from the standpoint of the brewer, it is of even more importance to the distiller since the alcohol yield of the fermented products are decreased by the presence of heavy bacterial contamination. Disinfected malt has shown an increase in alcohol yield as high as 3% in distillation of 100-proof grain alcohols.

Methods and quantities of application of HTH to the steep bath vary due to variations in steeping time, changing ratios of barley to water in the steeping operation (from 1 gallon to 8 gallons of steep water per bushel). Where steeping water temperatures do not vary too widely the simplest means of application is by addition of the dry HTH directly to the steep tanks while being filled. Sufficient HTH is added to the initial steep to afford a dosage of 100 to 350 ppm available chlorine in the steep water prior to introduction of the barley. The dosage varies with the time interval allowed for the initial steep and the character of the water supply.

A typical initial steep bath now in use consists of about 1,000 gallons of deep well water to which 12 1/2 lbs. HTH is added dry while filling steep tanks to produce a dosage of about 325 ppm available chlorine. About 1,000 bushels of barley steeps for a period of 4-6 hours in this solution, after which the usual overflowing and washing takes place. Sufficient improvement in the germination qualities and overall malt quality has been noted to warrant the small additional cost.



IV WINERIES

A. PLANT DISINFECTION AND PLANT EQUIPMENT SANITATION

Problem

The problem of winery sanitation is made relatively easy, when simple, economical chemical disinfection practices are followed.

Treatment

Clean all plant equipment and space after each run. Disinfect HTH solution before the next run in this manner:

1. Rinse the non-porous surfaces of all walls, floors, equipment, etc. with a solution prepared by dissolving 1 oz. dry HTH for each 10 gallons of water (500 ppm). After 10 minutes, clear water-rinse any surface which may come in contact with wines.
2. Swab or spray rough surfaces (wood, concrete, etc.) with a solution containing 1 oz. dry HTH for each 5 gallons water (1000 ppm) well after 10 minutes if wine products will come in contact with the surface.

1058-1066

3. Storage vessels, fermenting vats, casks, presses, grape crushers, etc. should first be thoroughly cleaned. They may then be sanitized by rinsing or spraying with a solution which contains 1 oz. dry HTH for each 25 gallons of water (200 ppm). After 10 minutes, they should be washed well with potable water to protect metal equipment against corrosion.
4. Sanitization of bottles and corks may be accomplished by immersing them for 5 minutes in a tank containing 1 oz. dry HTH for each 25 gallons of water (200 ppm). They may then be freed of any remaining chlorine by thorough rinsing in potable water.

B. MOLD CONTROL

Problem

Any signs of mold growth at the winery should be regarded as a warning that more stringent bacteria control curbs are necessary.

Treatment

Active outbreaks of mold must be destroyed immediately to prevent further spreading. The affected surfaces should be scrubbed or sprayed with a solution containing 1 oz. dry HTH for each gallon of water (5000 ppm). Heavy mold growths may require repeated applications.

C. FILLING AND STORAGE TANKS

Problem

The regular disinfection of filling and storage tanks serves to keep these receptacles in a sweet condition. As a consequence, a better quality product is assured.

Treatment

1. Filling tanks must be thoroughly cleaned after each run. Just before filling, they should be filled with a solution containing 1 oz. dry HTH for each 10 gallons of water (500 ppm) if of wood construction; 1 oz. to 20 gallons if of metal or tile construction (250 ppm). A period of 1 hour should elapse before the solution is removed from wood tanks. Rinse with potable water before filling.
2. Tanks and vats, when not being used, can be kept in sweet condition by filling them with water and adding 1 lb. HTH for 5000 gallons capacity (approximately 15 ppm chlorine). Test the water weekly and renew the charge if the residual falls below 2 ppm.

D. SANITIZING PRESS CLOTHS

Problem

Press cloths contaminated with bacteria and organic matter provide excellent conditions for germ multiplication.

Treatment

Press cloths should be washed well after using, and bleached and sanitized by soaking for 15 minutes in a solution which contains 2 oz. HTH for each 100 lbs. dry weight of cloths.

V MISCELLANEOUS BEVERAGE PLANTS

A. GRAPE JUICE PLANTS

The same sanitation procedure may be followed as that already outlined in Section IV, under "Wineries".

B. CIDER INDUSTRY

PROBLEM

Sweet cider, stored under cold conditions, frequently develops a fungus growth which causes spoilage.

1058-1056

Treatment

Clean each cider cask thoroughly, then rinse well with a solution containing 6 oz. dry HTH for each gallon of water (3% available chlorine). This procedure will aid materially in preventing fungus growth. Remember to rinse treated casks with sufficient quantities of potable water before filling.

KEEP OUT OF REACH OF CHILDREN

DANGER

SEE PRINCIPAL LABEL FOR COMPLETE
PRECAUTIONARY INFORMATION AND
STORAGE AND HANDLING.