ACTIVE INGREDIENTS:

Polyethoxy polypropoxy polyethoxy ethanol-iodine complex 9.10%

Nonylphenoxypolyethoxyethanol [redacted]-iodine complex 8.74%

(Provides 1.6% min. titratable iodine)

INERT INGREDIENTS: 82.16%

"TAMED IODINE"®

Wescodyne®

GENERAL PURPOSE DETERGENT-GERMICIDE

U.S.D.A. Reg. No. 52-80

NET CONTENTS: 1 GALLON U.S.

MANUFACTURED BY

WEST CHEMICAL PRODUCTS INC.

42-16 WEST ST., LONG ISLAND CITY 1, N. Y.

CAUTION: Keep Out Of The Reach Of Children.
Avoid contamination of food.

U.S. PATENT NO. 2759859, 2931777, 3028299

"TAMED IODINE"®

Wescodyne

WESCODYNE is an excellent combination general purpose detergent and germicide formulated for industrial and institutional uses. It will remove dirt efficiently and economically.

CLEANING ACTION: This material should be used to clean and disinfect floors, washable walls, furniture, Venetian blinds, metal cabinets, drinking fountains, telephone mouthpieces and elsewhere throughout industrial plants, cafeterias, locker rooms and on food equipment in food plants, canneries, breweries, bottling plants, etc.

GERMICIDAL ACTION: In use dilution WESCODYNE kills most bacteria, viruses, molds, fungi and other pathogens which may be found on inanimate surfaces.

DIRECTIONS FOR USE

GENERAL: For general cleaning and disinfecting in a single operation use 3 ounces of WESCODYNE to 5 gallons of water. For porous surfaces or those difficult to clean use 6 ounces of WESCODYNE to 5 gallons of water. WESCODYNE contains several synthetic detergents. No soaps or other cleaner should be added.

FLOORS AND WALLS: Use 3 ounces of WESCODYNE to 5 gallons of water for cleaning and sanitizing floors and walls.

WESCODYNE is not adversely affected by common water hardness or low temperatures.

FOOD PROCESSING & BEVERAGE EQUIPMENT: Clean with a solution of 3 ounces of Wescodyne to 5 gallons of water. Rinse with potable water. To disinfect previously cleaned equipment use 1 oz. of Wescodyne to 5 gallons of water. This product is regulated by the U.S. Food & Drug Administration under the Food Additive Regulation for use on food processing equipment and utencils up to 25 ppm of available iodine, without requiring a rinse with potable water. State and Local Health Department requirements for sanitizing food processing equipment, dishes and glassware should be followed. A two minute contact time is stipulated by Health Departments that follow the U.S. Public Health Service Ordinance Code.

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Wescodyne

The General Purpose Disinfectant for Hospital Use

Containing "Tamed Iodine"®

. . . . To all professional personnel who have been charged with the responsibility for providing positive and prompt disinfection, the problem of selecting a disinfectant has been most challenging. The situation has always been a difficult one, due to the diversified demands placed upon a disinfectant when used in the modern hospital . . .

WEST CHEMICAL PRODUCTS INC.

Reg U.S. Pat. Off.

Introduction

IN THE PAST disinfectants were marketed in good faith and claims for these disinfectants similarly were made in good faith, but time, experience and improved laboratory techniques have uncovered limitations in the performance of these disinfectants. Modern standards for disinfectants underline the limited scope of bacterial efficiency and virucidal action of many of the popular and frequently used disinfectants. These facts may explain the intermittent epidemics of infant diarrhea, outbreaks of Staph infections, gastro-enteritis among the house staff, and the occasional failure of terminal disinfection techniques.

To meet the diversified challenges offered in the hospital, it is obvious that the best disinfectant is one that is active against the greatest number of organisms. In effect, a disinfectant that offers positive, but safe, disinfection and which is non-selective in its ability to kill the widest spectrum of organisms. WESCODYNE is such a disinfectant. Hospital personnel who are all familiar with disinfectants using phenols, chlorines, chlorinated phenols and quaternary ammonium compounds in their formulation are also very much aware of the shortcomings of these disinfectants. Current authoritative literature makes these shortcomings even more evident.[38]

* * * * *

Authorities know that iodine, in aqueous solutions, has not received the attention it deserves as a disinfectant. Iodine, when properly used, is still one of the most effective, non-selective germicidal agents known. The efficacy of iodine needs no introduction to hospital and public health personnel who are aware of its disinfecting properties. Iodine has been proven to act against a variety of organisms such as viruses,[1-5] protozoa,[6,7] fungi,[8,9] yeasts, spores[10] and bacteria,[11,12,13,14] including the tubercle bacillus.[15,16,17] Because it will effectively kill the widest spectrum of organisms, iodine is designated a non-selective germicide.

The limited use of iodine in the past has been due in part to the fact that too high concentrations have been used in conjunction with volatile carriers. These unfavorable factors have now been mastered in WESCODYNE, while yet retaining all of the germicidal advantages of iodine. As a result, iodine, for the first time, has been brought into the field of environmental sanitation and disinfection, in a safe, economic, and very effective form.

"Tamed Iodine"®

West Chemical Products, Inc., through many years of research, has pioneered the development of Iodophors. The term Iodophors is descriptive of formulations that consist of iodine complexed with certain types of surface active agents that have detergent properties. West Chemical Products has designated its Iodophors as Tamed Iodines.

Advantages of Wescodyne

1. This new detergent-iodine complex not only enhances the bactericidal activity of iodine but it also renders the iodine non-toxic, non-irritating and non-staining when used as directed. It also makes WESCODYNE water soluble and stable under normal conditions of storage. Finally, WESCODYNE has no appreciable odor, thereby affording a disinfectant that has no offensive or obnoxious "hospital smell."

2. WESCODYNE is not only an excellent disinfectant and sanitizer, but because of its incorporated non-ionic detergents, it is also a cleaning agent.

3. WESCODYNE solutions are fast acting. Prolonged soaking is unnecessary. Disinfection is accomplished generally in 10 minutes or less.

4. WESCODYNE solutions have the *unique distinction of indicating their own germicidal activity*. When used in recommended dilution, the solution contains a rich amber color. As the solution is employed, the color fades as the iodine-complex kills organisms. However, as long as the amber color remains in the solution, germicidal action continues. The user may be certain at all times that the disinfectant solution retains the ability to kill most organisms quickly and completely. The importance of such a visual safeguard against the use of titrated solutions of disinfectant is self evident.

5. Cold water is used to dilute WESCODYNE to the desired concentration since WESCODYNE is an effective cleaner and disinfectant at low temperatures. Ordinary water hardness does not affect WESCODYNE adversely, either as a sanitizer or a cleaner.

WESCODYNE has been tested in, and is currently being used by, hospitals throughout the United States. It has been found that this product is advantageously and economically used in many hospital procedures. These clinically tested results are submitted on the following pages.

Throughout these data please note that — in laboratory evaluation the "use dilutions" ranged from 25 ppm to 75 ppm available iodine. (One to three ounces of WESCODYNE to five gallons of water.) However, it has been suggested by hospital personnel that routine use in hospitals be standardized to a minimum concentration of 75 ppm available iodine. This simplifies directions for use and provides a margin of safety. For porous surfaces or surfaces which are difficult to clean, a use dilution of 150 ppm available Iodine is recommended.

Method of Preparing Wescodyne

Note:	
18 c.c. per 3785 c.c. (1 gallon)	75 ppm available iodine
36 c.c. per 3785 c.c. (1 gallon)	150 ppm available iodine
3 oz. per 5 gallons of water	75 ppm available iodine
6 oz. per 5 gallons of water	150 ppm available iodine

Specific data on the following subjects can be found in the following sections:

1. *Toxicology and Sensitivity*
2. *Microbiology*
3. *Professional Uses*
   a. Skin disinfection
   b. Thermometer disinfection
   c. Instrument disinfection
   d. Isolation and terminal disinfection
   e. Operating Room use (conductive floor data)
4. *Housekeeping Uses*
5. *Other Uses*
   a. Morgues
   b. Lavatories
   c. Refuse areas
   d. Diet kitchens
   e. Cafeterias

TOXICOLOGY AND SENSITIVITY DATA

I. Acute Oral Toxicity studies were performed by a leading Eastern independent laboratory. WESCODYNE was introduced directly into the stomachs of [illegible] white rats and guinea pigs. The results of the study are as follows:

A. WESCODYNE in concentrated form

White rats	LD	10 cc/kg
	LD	15 cc/kg
	LD	20 cc/kg
Guinea pigs	LD	7 cc/kg
	LD	15 cc/kg
	LD	20 cc/kg

B. WESCODYNE in dilutions of 1 ounce to 1 gallon of water. White rats and guinea pigs. These animals were given up to 100 cc/kg without producing any mortalities. It was deemed inadvisable to administer higher dosage for fear of producing mechanical injury. LD [illegible] is the average dose ingested at one time that is lethal to 50% of the test animals. The LD 0% (no rats killed) corresponds to [illegible] of a quart of WESCODYNE totally [illegible] or about 168 quarts of the use dilution (75 ppm) for an adult human.

II. Skin Irritation and Sensitization Studies

A. Schwartz Method — The material was applied in the form of a patch to the skin of the backs of 200 unselected subjects (100 males and 100 females) and permitted to remain in contact with the skin for a period of five days, at the end of which time, the patches were removed and reactions noted. Three weeks after the removal of the first series of patches, [illegible] applied to the [illegible] backs of the same subjects and permitted to remain in contact with the [illegible] hours. After this period the patches were removed and [illegible] noted.

WESCODYNE *in concentrated form*

[illegible]

Second application — none of the males and none of the females reacted.

WESCODYNE *in use dilution*

First application — none of the males and none of the females reacted.

Second application — none of the males and none of the females reacted.

B. Repeated Insult Method

(Draize and Shelanski)

The material was applied in the form of a patch on the backs of 50 subjects (25 males and 25 females) for 24 hours every other day for 15 applications, or a total of 30 days. At the end of this time, a period of three weeks was allowed to elapse, after which time the material was again applied in the form of a patch to the skin of the backs of the same subjects. These patches were permitted to remain for a period of 48 hours, after which the material was removed and the reactions noted.

WESCODYNE *in concentrated form*

There were several one plus reactions obtained on 23 subjects (9 male and 14 female) during the first 15 applications. There were no reactions on re-application.

WESCODYNE *in use dilution*

There was no reaction during the fifteen applications or the re-applications 3 weeks later.

Conclusions.

A. [illegible]

B. [illegible]

[illegible]

MICROBIOLOGICAL DATA

Recent developments and newer techniques in the evaluation of disinfectants have clearly established the limited nature of "Phenol Coefficient" and "Agar Plate" methods. In fact some authorities have recommended that disinfectants be subjected to many different tests to obtain "Profile Evaluations of Germicides". Likewise, many authorities feel that disinfectants be tested and evaluated under conditions simulating actual use. The information presented herewith is, therefore, based upon a series of evaluation methods in which the manufacturer's recommended use dilution of the disinfectant is tested under those conditions simulating clinical use. The use of phenol coefficient or agar plate test methods provides data that are *often subject to misinterpretation*. For this reason, the following methods are now the methods of choice for testing use dilutions of the phenolics and quaternaries, as well as the halogens, when used for environmental disinfection or sanitation.

Action of Wescodyne against the Tubercle Bacillus

A pathogenic human strain of *Mycobacterium tuberculosis* was obtained. This strain is listed in the American Type Culture Collection catalogue as ATCC 7690. This organism was grown on Lowenstein-Jensen media for thirty days at 37° C. At this time the growth on several tubes was washed off with sterile saline and the washings were combined. The number of organisms per ml. of the combined washings was determined using a hemocytometer with the red blood cell counting chamber. The number of organisms per ml. was determined. Dilutions of this initial suspension of organisms were made so that final concentrations of 50,000 organisms per ml., 10,000 organisms per ml., and 1,000 organisms per ml. were obtained. These three concentrations were used for this study in guinea pigs as follows:

1.0 ml. of each concentration of *Mycobacterium tuberculosis* in saline was added to 2.0 ml. of a solution of WESCODYNE containing 75 ppm available iodine.

The culture and the dilution of WESCODYNE remained in contact with each other for a ten minute contact period at room temperature. At the end of the contact period, 1.0 ml. portions of the mixture of organism and WESCODYNE were injected into the inguinal region of the guinea pig. Three guinea pigs were injected for the dilution of WESCODYNE tested at each concentration of organism.

Controls were run using sterile saline to replace the WESCODYNE. The controls were run at a ten minute contact period [illegible] concentrations of 50,000 per ml., 10,000 per ml., and 1,000 per ml. Mixtures of organism and saline were injected into the inguinal region of guinea pigs using three guinea pigs for each concentration of organism studied. All mixtures of WESCODYNE organism and saline organism were streaked on Lowenstein-Jensen media tubes just prior to inoculation into the guinea pigs. These tubes were incubated at 37° C and observed for surface growth typical of *Mycobacterium tuberculosis* as well as serving as sterility controls.

The guinea pigs after being injected were housed individually in plastic cages in an air conditioned room. They are isolated from other animals as well as from personnel of this laboratory except for being fed and having their cages cleaned. All animals survived a six week observation period, and at this point they were all sacrificed and lesions typical of tuberculosis were looked for.

The tubes of Lowenstein Jensen media which were inoculated with the mixture of saline and organism showed growth typical of *Mycobacterium tuberculosis* after ten days of incubation at 37° C. None of the WESCODYNE organism tubes showed any growth at any time during the six week observation period.

None of the guinea pigs died during the six week observation period. Therefore, at the end of the six week observation period all of the guinea pigs were sacrificed and examined for lesions typical of tuberculosis. All of the saline control guinea pigs showed typical lesions of tuberculosis when sacrificed

These lesions were found in the inguinal lymph nodes, spleen, liver, and in some instances in the mesenteric lymph nodes. There were fewer lesions in the guinea pigs inoculated with an organism concentration of 1,000 per ml. than in those inoculated with either 50,000 per ml. or 10,000 per ml. In all cases the controls had definite positive tuberculosis. The guinea pigs inoculated with organism WESCODYNE mixtures showed no lesions typical of tuberculosis in any organ. Smears were made from the liver, spleen, inguinal lymph nodes and mesenteric lymph nodes. These were stained with acid fast stain. On examination no acid fast bacilli could be found. Smears of the same organs were made on Lowenstein-Jensen agar. These also were negative for growth typical of *Mycobacterium tuberculosis* after fourteen days of incubation at 37° C.

Conclusions: WESCODYNE was studied in-vivo as to its tuberculocidal activity using guinea pigs as the test animals. From the results obtained in this study, under the conditions of testing described in this report, we may conclude that WESCODYNE appears to have tuberculocidal activity when tested as a solution containing 75 ppm available iodine when in contact with a human pathogenic strain of *Mycobacterium tuberculosis* for a ten minute contact period.

The Action of Wescodyne Compared with Other Disinfectants in Simulated Hospital Conditions

(Use Dilution Confirmation Test, as described by L. S. Stuart, L. F. Ortenzio and J. L. Friedl (U.S.D.A.) in the Journal of the Association of the Official Agricultural Chemists, May 1953, Pages 466-79.)

Explanation: This method uses two different test microorganisms in the "ring carrier" or use-dilution confirmation method. This is a test on dried films in the presence of organic matter, that approaches the type of situation encountered in hospital disinfection procedures.

Method: The method consists essentially of immersing small metallic cylinders into a broth culture of bacteria, allowing the film on the cylinders to dry and then immersing the contaminated cylinders into the use-dilution of the disinfectant for 10 minutes at 20° C.

Dilutions: The Hudson Laboratories, Inc., New York, New York compared WESCODYNE at 75 ppm available iodine with the following disinfectants:

1. Sodium hypochlorite solution, buffered to pH 7.9 and providing 100 ppm available chlorine.
2. Quaternary ammonium compound, alkyl-dimethyl benzyl ammonium chloride, at 200 ppm.
3. Popular phenolic type diluted to 1:100.

Organisms: *Salmonella choleraesuis* (ATCC #10708); *Micrococcus pyogenes var. aureus* (FDA 209, ATCC #6538)

Contact: Ten ring carriers contaminated with each organism respectively, were contacted with the above dilutions of the sample for ten minutes at 20° C.

Media: Fluid thioglycolate medium (USP XIII) was used for testing WESCODYNE and sodium hypochlorite. FDA nutrient broth was used for testing the phenolic type disinfectant. "Letheen" broth was used for testing the quaternary compound. All tests were re-subcultured into the same medium. These media and re-subculturing served to eliminate any possible bacteriostatic effects.

Results: The following table shows the maximum number of positive tubes (those tubes showing bacterial growth, or incomplete kill) in the subculture and re-subculture tubes.

Organism	Wescodyne 75 ppm Iodine	Sodium Hypochlorite 100 ppm	Phenolic Type 1:100	Quaternary Compound, 200 ppm
S. choleraesuis	0	0	0	1
M. pyogenes var. aureus	0	4	2	1

Conclusions: When tested by the above procedure at the dilutions indicated above, WESCODYNE is the only sample that kills both organisms on all ten ring carriers.

Note This is the method used by the U. S. DEPARTMENT OF AGRICULTURE to confirm recommended use dilutions that are based on phenol coefficient studies

The Procedure of Black and Weber (U.S.P.H.S.)

(As described in the American Journal of Public Health, Volume 38, pp. 1405-1417, October 1948.)

Explanation: Essentially, this procedure measures germicidal efficiency by affording plate counts of surviving organisms at a series of time intervals, after mixing the sample solution with a suspension of the test organism. At the specific time intervals, aliquots of the test mixture are transferred to special dilution blanks containing substances capable of destroying the germicide or inhibiting its antibacterial activity. As recommended by Black and Weber, dilution blanks containing sodium thiosulfate were used in the tests of WESCODYNE and sodium hypochlorite and dilution blanks containing TWEEN-lecithin inhibitor were used in the test of "Quaternary" (alkyl dimethyl benzyl ammonium chloride). The agar used for the plate counts also contained TWEEN lecithin inhibitor.

The sample solutions and inoculum suspensions were made up in a typical hard water, obtained from a well used by the city of Norwood, Ohio.

Organism: *Escherichia coli*, ATCC #11229

Method: WESCODYNE was diluted for test, on the basis of the stated content of 1.6% available iodine, so that the test mixture would contain 25ppm available iodine. The "Quaternary" control was diluted on the basis of the labelled content of 50% active ingredient, so that the test mixture would contain 200 ppm alkyl dimethyl benzyl ammonium chloride. The sodium hypochlorite control was prepared by assaying a household bleach solution (freshly purchased) and diluting on the basis of the assay to give 50 ppm available chlorine in the test mixture.

Results

Sample	ppm	pH	Aliquot[1]	PLATE COUNT AFTER EXPOSURE OF 15″	30″	60″	120″	300″	Bacteriostatic Control[2]
Wescodyne[3]	25	7.49	0.1	1	0	0	0	0	151
			0.01	0	0	0	0	0	
Quaternary	200	7.35	0.1	TNC[4]	TNC	TNC	594	12	194
			0.01	TNC	TNC	2007	58	0	
Hypochlorite[5]	50	7.40	0.1	0	1	0	0	0	178
			0.01	1	2	1	0	2	

[1] Ml. of test mixture represented by plate count.
[2] Plate count of double aliquot of the 5 min. dilution plus 1 ml. of 10⁻² dilution of inoculum suspension. A count equal to or greater than the corresponding inoculum count indicates that the germicide's action was successfully stopped by the special dilution blanks.
[4] TNC: too numerous to count, several thousand or more.
[3] ppm refers to available iodine.
[5] ppm refers to available chlorine.

Inoculum count 10^{-8}/ml. 149, 164, equivalent to 29×10^{8} organisms per ml. of medication mixture.

Conclusions Under the conditions of this test, WESCODYNE killed all the test inoculum of *E. coli* in 15 seconds.

Capacity Test for Germicidal Action

(A. Cantor and H. Shelanski Capacity Test as described in *Soap and Sanitary Chemicals*, February 1951.)

Explanation: This method essentially consists of adding to the use dilution of the disinfectant or sanitizer, successive doses of a 50-50 mixture of milk plus broth culture of test organisms. These doses are added at ten minute intervals. Thirty seconds after each addition, a transfer is made into broth containing a suitable inactivator. This method makes it possible to determine the capability of a germicide to kill before the microorganisms and organic contamination have exhausted its germicidal action.

Organisms: *Salmonella typhosa* ATCC #6539, *Micrococcus pyogenes var. aureus* ATCC #6538, *Salmonella paratyphi* ATCC #9093, *Pseudomonas aeruginosa* ATCC #8689, *Trichophyton interdigitale* Emmons 640, ATCC #9533, *Penicillium luteum*, ATCC #9644, *Saccharomyces cerevisiae*, ATCC #10274

Dilutions: WESCODYNE 1:320 (50 ppm available iodine); sodium hypochlorite (100 ppm available chlorine); Quaternary (50%) 1:5,000 (100 ppm active ingredient)

Temperature 15° C

Media Fluid thioglycolate medium, USP XIII was used for testing WESCODYNE and sodium hypochlorite. Letheen broth was used for testing alkyl dimethyl ammonium chloride. All tests were re-subcultured in the same medium.

The Procedure of Black and Weber (U.S.P.H.S.)

(As described in the American Journal of Public Health, Volume 38, pp. 1405-1417, October 1948.)

Explanation: Essentially, this procedure measures germicidal efficiency by affording plate counts of surviving organisms at a series of time intervals, after mixing the sample solution with a suspension of the test organism. At the specific time intervals, aliquots of the test mixture are transferred to special dilution blanks containing substances capable of destroying the germicide or inhibiting its antibacterial activity. As recommended by Black and Weber, dilution blanks containing sodium thiosulfate were used in the tests of WESCODYNE and sodium hypochlorite and dilution blanks containing TWEEN-lecithin inhibitor were used in the test of "Quaternary" (alkyl dimethyl benzyl ammonium chloride). The agar used for the plate counts also contained TWEEN-lecithin inhibitor.

The sample solutions and inoculum suspensions were made up in a typical hard water, obtained from a well used by the city of Norwood, Ohio.

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Results:

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			0.01	0	0	0	0	0	
Quaternary	200	7.35	0.1	TNC[3]	TNC	TNC	594	12	194
			0.01	TNC	TNC	2007	58	0	
Hypochlorite**	50	7.40	0.1	0	1	0	0	0	178
			0.01	1	2	1	0	2	

[1] Ml. of test mixture represented by plate count.
[2] Plate count of double aliquot of the 5-min. dilution plus 1 ml. of 10^{-6} dilution of inoculum suspension. A count equal to or greater than the corresponding inoculum count indicates that the germicide's action was successfully stopped by the special dilution blanks
[3] TNC - too numerous to count, several thousand or more
*ppm refers to available iodine.
**ppm refers to available chlorine.

Inoculum count 10^{-6}ml. 149; 164, equivalent to 79×10^6 organisms per ml. of medication mixture.

Conclusions: Under the conditions of this test, WESCODYNE killed all the test inoculum of *E. coli* in 15 seconds.

Capacity Test for Germicidal Action

Capacity Test For Germicidal Action

Results

Organism	Wescodyne	Sod. Hypochl	Quaternary
Salmonella typhosa (typhoid organism)	7	3	5
M. pyogenes v. aureus (staphylococcus organism)	7	3	4
Salmonella pullorum (poultry disease organism)	6	2	0
Pseudomonas aeruginosa (wound contaminent organism)	4	1	0
Trichophyton interdigitale (athlete's foot)	8	2	0
Penicillium luteum (mold organism)	3	0	0
Saccharomyces cerevisiae (yeast organism)	4	1	0
TOTAL	39	12	9

* Neopeptone dextrose broth was used for testing the alkyl dimethyl benzyl ammonium chloride against the three fung

This report shows WESCODYNE to be over 3 times more effective than the nearest material tested.

Destruction of Antibiotic Resistant Staph

Method: Modified A.O.A.C. Phenol coefficient

Organism: Hemolytic staphylococcus aureus, freshly isolated from blood culture and found to be resistant to terramycin, aureomycin, penicillin and streptomycin.

Temp. of Test: 20° C.

Medium: Fluid thioglycollate.

Incubation: 37° — 48 hours.

Results: The following table shows results obtained.

Dilution Tested		Exposure Time in Minutes				
		½	1	2	3	4	5
75 ppm av. iodine	A	·	0	0	0	0	0
	B	·	0	0	0	0	0
50 ppm av. iodine	A	·	·	0	0	0	0
	B	·	·	0	0	0	0

· growth 0 no growth

Conclusions: It can be seen from the above results that WESCODYNE kills the above organism within 1 minute at 75 ppm av. iodine and within 2 minutes at 50 ppm av. iodine.

Germicidal Equivalent Concentration

Method: A.O.A.C. *Germicidal Equivalent Concentration* 8th Edition, 1955, page 93.

Medium: Thioglycollate Broth

Temperature: 20° C.

Dilution: WESCODYNE 75 ppm av. iodine.

Organism		Increments of Culture									
		1	2	3	4	5	6	7	8	9	10
Para dysenteriae Flexner	A	0	0	0	0	0	0	0	0		
	B	0	0	0	0	0	0	0	0		
Diplococcus pneumoniae III	A	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	0	0	0	0
Corynebacterium diptheriae	A	0	0	0	0	0	0	0	0	·	
	B	0	0	0	0	0	0	0	0	·	

A subculture · growth
B resubculture 0 no growth

Wescodyne vs. Leading Phenolic Disinfectant

(A. Cantor and H. Shelanski as described in Soap and Sanitary Chemicals, February 1951.)

Dilutions: WESCODYNE: 1:213 (75 ppm available iodine); phenolic disinfectant: 1:100.

Temperature: 15° C.

Media: Fluid thioglycolate medium, U.S.P. XIII was used for testing WESCODYNE and FDA nutrient broth was used for testing the phenolic disinfectant. All tests were re-subcultured in the same medium to eliminate bacteriostasis.

Results:

The following table shows the results obtained.

Organism	Wescodyne (1:213 dilution)	Phenolic Disinfectant (1:100 dilution)
Salmonella typhosa (typhoid organism)	10+	8
M. pyogenes v. aureus (staphylococcus organism)	7	4
Strep. pyogenes hemolyticus (streptococcus organism)	10+	7
Escherichia coli (enteric organism)	8	6
Shigella sonnei (dysentery organism)	8	7
Salmonella schottmuelleri (food contaminant causing dysentery)	8	6
TOTAL	51+	38

Conclusion: This test shows that the bactericidal effectiveness (in the presence of organic contamination) of WESCODYNE at a dilution of 1:213 (75 ppm available iodine) is *greater* than that of a leading phenolic disinfectant at a dilution of 1:100.

Virucidal Action of Wescodyne

1. *Poliocidal Action* - The poliocidal activity of WESCODYNE was determined in the virology department of one of the largest eastern U. S. medical schools. Hela cell tissue cultures were used to culture the Type I (Brunhilde) strain of virus. The virus type used was of human pathogenic nature. It was found that exposure of 10^6 infectious doses of virus to the recommended use dilution of the WESCODYNE completely inactivated the polio virus within two minutes. Under the same conditions, it was found that a leading and widely used phenolic type of disinfectant at use dilution failed completely to inactivate the polio virus, despite greatly prolonged contact times. Additional studies on three human pathogenic strains of the polio virus (Types I, II, and III) were conducted. It was found that the 50 ppm and 75 ppm levels of WESCODYNE iodine are effective within five minutes; the 75 ppm level is effective within two minutes, *and that the iodine color "indicator" of activity holds for poliocidal activity, just as previously established, and described in this brochure, for other organisms.*

2. *Virucidal Action Against Influenza and Newcastle Disease Viruses (The Newcastle virus is responsible for an economically important poultry disease which is transmissible to man.)* Virus-containing materials (allantoic fluid suspensions) were added to use-dilutions and higher dilutions of the products tested, so as to yield various virus concentrations. At the end of the designated contact time, 0.1 ml of the germicide-virus mixture was injected into the allantoic fluid of fertile chick eggs, in quadruplicate and in quintuplicate. The eggs were then incubated and examined for evidence of activity of the treated virus material.

The test results clearly establish that WESCODYNE is virucidal at the recommended use-dilutions and that this virucidal activity is demonstrable at much higher dilutions.

Sporicidal Activity of Wescodyne

1. *Surgical Type Plastic Sphere Method*—Surgical type plastic sphere (methyl methacrylate) were thoroughly contaminated with a culture of spores, vegetative cells having been previously killed. These contaminated spheres were then placed on filter paper in Petri dishes and dried at 37° C. for 3 hours. They were then placed individually in test tubes containing various dilutions of WESCODYNE. All tests were run in duplicate, a control test being carried out with distilled water. After the contaminated spheres had been exposed to the diluted WESCODYNE for the proper time interval, available iodine in the dilutions of WESCODYNE was neutralized with sodium thiosulphate. Double strength thioglycolate broth was added to each tube, the tubes then being incubated for 48 hours at 37° C.

The dried films involved were from spore suspensions of Clostridium tetani, ATCC #449 (organism causing tetanus or lockjaw) and Clostridium perfringens (welchii) (ATCC) #9081 (one of the organisms causing gas gangrene).

Conclusion: The results shown at the right indicate that the plastic spheres heavily contaminated with dried spores of Clostridium perfringens (Clostridium welchii) were sterilized within ½ hour by solutions containing 100 ppm or more of available iodine. Under the same test conditions, plastic spheres heavily contaminated with dried spores of Clostridium tetani were sterilized within ½ *hour by solutions containing 200 ppm or more of available iodine.*

Dilution available iodine	½ hr.	1 hr.	2 hrs.	4 hrs.
		Clostridium Tetani		
100 ppm	+	+	+	0
200 ppm	0	0	0	0
300 ppm	0	0	0	0
500 ppm	0	0	0	0
Distilled water	+			+
		Clostridium Perfringens		
100 ppm	0	0	0	0
200 ppm	0		0	0
300 ppm	0	0	0	0
500 ppm	0	0	0	0
Distilled water	+			+

+ Growth 0 No growth

A WESCODYNE solution containing 100 ppm or more of available iodine sterilizes the plastic spheres contaminated with Clostridium tetani in 4 hours.

Final results showed no damage to the plastic spheres.

Residual Action of Wescodyne on Various Floor Surfaces

(Method of E. G. Klarmann, E. S. Wright and V. A. Shiraev, *Applied Microbiology*, Vol. 1, No. 1, January 1953, p. 19.)

Unglazed porcelain bath tiles, battleship linoleum, rubber tiles and asphalt tiles were sterilized by autoclaving and allowed to air dry at room temperature for a period of 24 hours. After air drying,

* Name furnished upon written request.

each piece of flooring material was divided into 3 equal portions, each portion being treated with the following:

Portion #1 WESCODYNE, diluted 1:213 (75 ppm available iodine)

Portion #2 Leading phenolic disinfectant, diluted 1:100

Portion #3 Distilled water

The [illegible] were then placed in Petri dishes [illegible] room temperature

RESIDUAL ANTI BACTERIAL ACTION
(Total Bacterial Counts per Test Specimen)

Flooring Material	After Four Days			After Seven Days		
	MICROCOCCUS PYOGENES VAR AUREUS					
	Wescodyne	Phenolic	Water	Wescodyne	Phenolic	Water
Bath Tiles	100	400	1,850	190	280	950
	160	320	1,650	165	320	1,100
	130	300	1,600	110	340	1,600
	120	260	1,700	185	310	1,350
Average	130	320	1,700	143	313	1,250
% Reduction	92.4%	81.2%		88.6%	75.0%	
Asphalt Tiles	150	185	1,150	155	265	1,800
	105	195	1,400	240	310	1,900
	95	210	1,250	195	360	1,650
	120	240	1,600	270	285	1,750
Average	118	208	1,350	215	305	1,775
% Reduction	91.3%	86.4%		87.9%	82.8%	
Linoleum	75	195	1,250	140	320	1,800
	110	140	900	110	240	950
	85	125	1,650	75	280	1,750
	120	140	1,200	115	300	1,400
Average	98	150	1,250	110	285	1,475
% Reduction	92.2%	88.0%		92.6%	80.7%	
Rubber Tiles	145	270	950	120	320	1,600
	120	210	1,250	195	400	1,950
	85	145	1,400	145	360	1,800
	70	195	1,300	210	280	1,850
Average	105	205	1,225	168	340	1,800
% Reduction	91.5%	83.3%		90.7%	81.1%	

The above test was repeated with WESCODYNE and distilled water only, using a 1:1000 dilution of *Salmonella choleraesuis*, ATCC #9149 as the contaminating organism.

After 4 days, some of the treated surfaces were contaminated with a 1:5000 dilution of a culture of *M. pyogenes var. aureus*, ATCC #6538. Others were similarly contaminated after 7 days.

One hour after contamination, the treated surfaces were placed in melted tryptone glucose extract agar and incubated at 37° C for 48 hours.

After incubation, the colonies growing on each surface were counted. The following results were obtained.

RESIDUAL ANTI BACTERIAL ACTION
(Total Bacterial Counts per Test Specimen)

Flooring Material	After Four Days		After Seven Days	
	SALMONELLA CHOLERAESUIS			
	Wescodyne	Water	Wescodyne	Water
Bath Tiles	20	1,250	85	2,400
	30	1,200	40	1,900
	30	1,150	65	2,100
	40	900	75	1,600
Average	30	1,125	66	2,000
% Reduction	97.4%		96.7%	
Asphalt Tiles	27	1,900	40	2,100
	42	2,100	55	1,65
	16	1,700	80	2,000
	36	1,600	95	2,350
Average	31	1,830	63	2,025
% Reduction	98.3%		96.9%	
Linoleum	18	1,500	65	1,800
	24	1,450	85	1,400
	22	1,800	50	1,200
	26	1,550	70	1,700
Average	23	1,575	68	1,500
% Reduction	98.5%		95.4%	
Rubber Tiles	20	1,900	40	1,400
	18	2,200	60	1,800
	14	2,600	35	2,000
	18	2,100	65	2,400
Average	18	2,200	50	1,900
% Reduction	99.2%		97.4%	

Conclusion: When tested by the above procedure, WESCODYNE at a dilution of 1:213 (75 ppm available iodine), has greater residual antibacterial action (after 4 and 7 days) against *M. pyogenes var. aureus*, than does a leading phenolic disinfectant. This is true for *all* four types of flooring material tested.

WESCODYNE at a dilution of 1:213, and tested as above, also exhibits a definite residual anti bacterial action, after 4 and 7 days, when tested against *Salmonella choleraesuis*.

Note: Salmonella choleraesuis was chosen rather than *Salmonella typhosa* as representing a typical gram negative pathogen because *Salmonella typhosa* is too easily killed by drying.

Conductivity Data

Purpose of Test:

To determine the effects of the WESCODYNE sample on the electrical conductivity of the flooring in accordance with NFPA Bulletin No. 56-1965.

Requirements:

There shall be no detrimental effect on the electrical conductivity of the flooring when the sample is tested in accordance with the following test procedure.

Procedure:

Floor conductivity (on two types of floors) shall be measured with the vibro test set using electrodes furnished with instrument. Each electrode shall be prepared for testing by removing all foils which may presently be applied. The electrodes shall then have new foil (lead or aluminum foil) applied to the rubber surfaces and the foil shall make intimate contact with the metallic portion of the electrode.

1) If possible select a 3-foot square near the center of the room. Measurements shall be taken in diagonal corners.

2) Resistance of floor (R F) shall be measured between the two electrodes spaced 3 feet apart using a test potential of 500 vdc.

3) Measurements shall be performed prior to applying the sample disinfectant to the test area and after the sample [illegible] applied and [illegible] dry.

Description of Test Apparatus:

Vibro test set
Manufacturer
Associated Research
[illegible] No.
MH [illegible] 2074

Test Results

This test was initiated on January 2[illegible], 1960 and completed on February [illegible] 1960.

The results indicate that the test [illegible] (WESCODYNE) had no detrimental effect to the electrical conductivity of the floorings.

Professional Uses

Thermometer Disinfection

The superiority of iodine as a disinfectant for either rectal or oral thermometers has recently been confirmed in the literature, with respect to the familiar upper respiratory, oral and intestinal pathogens, including the tubercle bacillus.[29,30,31,32]

In this connection, tests were carried out using WESCODYNE on rectal thermometers. These thermometers were contaminated by rectal insertion. *E. coli, enterococci, S. typhosa*, and *Proteus vulgaris* were recovered by sampling in thioglycolate media after removal. The thermometers were swabbed with a pledget soaked in WESCODYNE solution (75 ppm Iodine) to remove gross contamination, then immersed in WESCODYNE solution (75 ppm iodine) for five minutes and then recultured in thioglycolate media. No growth was obtained in any case after the five minute soak.

Isolation Techniques and Procedures

WESCODYNE is currently being used in hospitals in isolation and terminal disinfection procedures. WESCODYNE can be adapted conveniently to particular nursing procedures without altering the techniques employed. The difference will be assurance of positive chemical disinfection with visual proof of the activity in the color indicator of WESCODYNE.

In these procedures WESCODYNE has been used safely on beds, bed springs, floors, dishes (after removing food residue), basins, bedside tables, rubber sheets, etc.

Operating Room

The ever present hazard of infection, and contamination is always a consideration in the operating area. The control of pathogenic organisms is of the utmost importance. This procedure is presented primarily to aid the O. R. Staff in establishing a mode of operation that will give maximum protection to both patients and personnel.

At the conclusion of the surgical procedure, the disinfection of all inanimate objects (tables, kick pails, instrument tables, floors and walls), should be carried out by using a WESCODYNE solution containing 75 ppm available iodine (18 cc per gallon or three ounces to five gallons). The greatest source of air borne bacteria arises from foot traffic on contaminated floors. Therefore, the importance of proper floor maintenance in the O. R. with a detergent germicide that will not alter the conductivity of special flooring cannot be over emphasized. It is imperative that these bacteria be removed. The elimination of floor bacteria contained in excreta and dust is associated with a reduction in air borne bacteria and contamination. This may be accomplished with WESCODYNE.

All instruments which have been contaminated should be placed into a basin containing a WESCODYNE solution for transportation to the cleaning sink where they should be cleaned with a scrub brush and WESCODYNE 75 ppm available iodine to remove all pus, blood and exudates prior to sterilization or chemical disinfection.

After all non autoclavable materials are moved from the surgical theatre, they are to be washed and disinfected with a 75 ppm available iodine solution and rinsed. Ordinary hospital pro

Housekeeping Uses

Other Uses Reported

Summary

WESCODYNE is suitable for a wider variety of hospital end uses than other disinfectants, including instrument disinfection, treating of surgical equipment, sanitization of sickroom utensils, and as a general housekeeping detergent germicide.

Disinfectants of all types have organic overload points beyond which they are no longer effective [illegible]. Wescodyne contains a built-in [illegible] which allows the hospital personnel to determine when this point has been reached in any application. In fact, West Chemical Products Inc. continues to reject those iodophor products in which the color indicator has not been laboratory tested as a visual safeguard against the use of vitiated solutions. On this score, the user does not have to rely upon time consuming empirical laboratory tests or estimates of questionable validity.

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