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CONFERENCE

J O H A N N E S B U R G .

" SWIMMING POOL ORGANISATION "

" SWEMBAD - BESTUUR. "

E. A. LEAN.

17.10.1968.

THE HYGIENE AND CONTROL OF SWIMMING POOLS.

E.A. Lean : Chief Superintendent, Swimming Pools and Water Features,
Parks and Recreation Department : Johannesburg.

Introduction:

Mr. President, Ladies and Gentlemen,

I thank you for the honour extended to me to present a Paper at this Conference and it is my pleasure to address you today on the subject of the Hygiene and Control of Swimming Pools.

All public swimming pools must be controlled by a local authority, which in the case of Johannesburg is the Johannesburg City Council.

The standards governing these municipal swimming and paddling pools are grouped under the following four headings, each of which will be discussed in detail during this address.

- (a) The adequacy and cleanliness of the dressing accommodation.
- (b) The securing of the purity of the water in the pools.
- (c) Regulating the conduct of the bathers.
- (d) The prevention of accidents.

The Parks and Recreation Department controls the swimming pools reserved for the use of European persons, whilst those reserved for Non-European persons are controlled by the Non-European Affairs Department; as I am an official of the first-named Department, this paper has been based mainly on the control and management of the swimming and paddling pools in the Parks and Recreation Department, City of Johannesburg.

BRIEF DESCRIPTION.

The Department presently controls 15 major and 11 district swimming pools, 11 paddling pools in parks and 2 children's water playland features, with a further major and a district swimming pool presently in course of construction.

A tariff of admission charges applies for the use of the major swimming pools, which refers to the principal or Olympic, indoor, regional (suburban competitive) and the neighbourhood (non-competitive) types of swimming pools, each of which is staffed by a Pool Superintendent, two Pool Supervisors (one only at each of the neighbourhood swimming pools), Woman Attendants/Cashiers, European Subsidised Male Labourers and Bantu Cleaners.

District swimming pools are admission-free, having depths of from two feet to four and a half feet, with water areas ranging from one third to two thirds of the regional types and having capacities from between 20,000 and 100,000 gallons. They are each sited in parks of the suburbs not immediately served by a major swimming pool, and are intended primarily for, although not exclusively restricted to, the use of children.

They are provided with changerooms, shower and toilet facilities, but do not have any facilities for the storage of clothing, custody of personal belongings, hire of costumes or towels, etc., and each bather must, therefore, take care of his/her own belongings. Each district pool is staffed by a Pool Supervisor for control of the bathers and the correct chemical treatment of the water, and a Bantu labourer to maintain the cleanliness of the premises.

Paddling pools in parks are fairly large, shallow, free admission pools situated in parks throughout the city and are intended for the use of toddlers and young children.

The children's water playland features are combined paddling pools, water slides and fountain features, presently situated in the parks of the densely populated suburbs of Yeoville and Hillbrow and are serving to bring immense pleasure, not only to the young children of those two suburbs, but also to children from other suburbs both near and far.

I shall now deal in greater detail with the aforementioned administration standards and the first group falls under the heading of:

1. THE ADEQUACY AND CLEANLINESS OF THE DRESSING ACCOMMODATION.

(a) Provision of Adequate Dressing Accommodation.

Dressing accommodation should be sufficient for maximum attendances, bearing in mind that females will require greater privacy than males, but who are, however, likely to outnumber females and that children will outnumber adults, in the ratio of approximately 60% to 40% in both cases.

(b) Provision of Adequate Number of Shower Cubicles and Toilet Facilities.

While it is difficult to estimate accurately the attendance at a proposed public swimming pool, it is good practice to compare statistics at pools in similar situations and then to use the undermentioned formula to gauge what minimum number of shower cubicles, toilets and urinals should be provided:

<u>Number and Kind of Facility</u>	<u>Number of Males Served Based on Maximum Load</u>	<u>Number of Females Served Based on Maximum Load</u>
1 Toilet per	120	80
1 Shower per	120	80
1 Urinal per	120	-

To quote an example, a pool estimated to have a bathing load of 1,000 per session, at the ratio of 60% males to 40% females, would require five toilets and showers for each dressing side, plus urinal space for five adult men.

It is recommended that the walls of the showers, toilets and urinals be glaze-tiled to a height of six feet above ground level to reduce vandalism to a minimum and to facilitate cleaning.

It is desirable to have the showers, which should be provided with soap, situated before the toilets, which in turn should be situated before the pool surrounds, so that the bathers, who should always be encouraged to take a shower before entering the pool, would have to pass the toilets on the way to the pool.

(c) To ensure that the passages in the dressing accommodation have ample width for maximum permissible space, sunlight and cross-ventilation.

(d) To ensure that adequate cross-ventilation is provided to all changerooms, cloakrooms, toilet accommodation, etc.

- (e) To ensure that the floors of the passages, dressing rooms, changerooms, cloakrooms, etc., are of the non-skid, easily cleanable variety, having a slope sufficient to permit speedy and thorough drainage. Constantly damp areas, accompanied by possible algae growth, detracts from the general beauty of the pool and causes concern to all.
- (f) To ensure that the cloakroom clothing storage hangers and baskets are of vermin-proof design, having separate compartments for the bather's footwear to prevent contamination and fouling of the clothing. They should be constructed of durable material to withstand the rigours of public usage and to permit their being washed and disinfected by being dipped entirely into a cleansing fluid, without risk of rusting or the need for re-painting. It is essential that this cleansing procedure is carried out regularly.
- (g) To ensure that the seats and floors of the dressing cubicles and changerooms are washed and thoroughly disinfected daily by being sprayed with a 0.3 to 0.6 per cent chlorine solution.

This procedure should also be carried out to each of the dressing cubicles and changerooms immediately after the departure of each group of school pupils who may have used the dressing facilities during their school's organized swimming periods, in order that the accommodation may be clean and fresh for the following organized group of scholars.

Children frequently urinate on the dressing room floors while changing, hoping that their acts will go undetected by their uringe mixing with the water, which is dripping from their wet bodies and swimwear.

It could be considered that these precautions are elaborate and not entirely necessary, but various authorities on swimming pool sanitation have indicated that an unsanitary dressing room or changeroom may harbour fungus, infections of the skin, impetigo, scabies and body-lice infection. The bare anus on a dressing room seat or bench may result in pinworm ova infection or amoebic cysts. In any case, bathers are always delighted and thankful to be able to make use of a recently washed, disinfected and dried dressing cubicle or changeroom.

- (h) To ensure that each dressing cubicle or changeroom is provided with the requisite number of footboards or duckboards, and that these units are vermin-proof, and are washed and disinfected daily. The painting of these units is not permitted, as this practice only serves to disguise their true state.
- (i) To ensure that an adequate number of receptacles for rubbish, complete with some form of hinged lid to prevent fly settlement and for concealment of the contents, is provided at each swimming pool.
- (j) To arrange for footbaths to be provided at the entrances to or exits from the pool surrounds and that these facilities are adequately and constantly disinfected by the application of an 0.3 to 0.6 per cent chlorine solution. This can be done manually, but a more effective method is to have each footbath inter-connected to the filtration system and arranged to have a turnover rate of flow of from four to six times an hour.

- (k) To arrange for the walls of each communal dressing room to be equipped with clothing hooks, spaced approximately 15 to 18 inches apart, to prevent contact between the individual sets of clothing belonging to pupils who are using them during organized swimming periods, and who would not, because of the short length of time, have to make use of the storage cloakrooms.
- (l) To ensure that all swimming garments and towels available for hire to the public are thoroughly washed, disinfected, dried and aired before being re-issued. It is far wiser and safer to refuse the use of incorrectly-laundered garments than to risk the transmission of infection by their use.

2. SECURING THE PURITY OF THE WATER IN THE POOLS.

The water in the pools should be maintained constantly at, or as near as possible to drinking-water standards. This is done by the provision of a filtration plant, complete with the necessary chemical dosing and disinfection apparatus, to the following specifications:

- (a) That the turnover rate of flow for large open-air pools will not take a period longer than six hours and four hours for indoor pools (provided that the quantity of filtered water added per 24 hours shall not be less than 500 gallons per bather).

This would mean that a six-hour turnover filtration plant operating continuously for 24 hours a day would pass the volume of the water in the pools through the filter tanks four times, or six times in the case of the four hour turnover filtration plant. The rate of 500 gallons per bather, treated by the filtration plant per 24 hours, would provide for a bathing load of 4,000 bathers at an open-air pool having a capacity of 500,000 gallons, or 2,000 bathers at an open-air pool having a capacity of 250,000 gallons.

On this basis, toddlers' pools, or pools such as the popular playland water features, having small capacities of from 3,000 to 5,000 gallons, would have to have turnover rates of one hour or less. The wisdom of this formula can readily be appreciated by the explanation that shallow pools of low capacities soon become overloaded by the comparatively heavy bathing load, comprising mainly of babies or toddlers who, at their tender ages, are not only unable to control themselves, but are susceptible to all manner of illnesses and, in addition, in the process of playing, delightedly introduce all manner of foreign matter into the water - thus further increasing the load imposed on the filtration plant.

- (b) That the filtration rate of flow per square foot of filter area per minute be as follows:
- (i) For rapid pressure sand filters - From three, but not greater than five gallons per minute
 - (ii) For diatomaceous earth pressure filters - Not greater than one gallon per minute
- (c) That the pH of the water be maintained at a value of between 7.2 and 7.6. A pH value of less than 7.0 would be acidic, which would lead to bathers' discomfort, incorrect flocculation, corrosion of metalwork, etc., and is caused by the introduction of gaseous chlorine, alum, urination, perspiration, etc. Low pH is corrected by the addition of soda ash at the rate of 1.2 lbs. per lb. of gaseous chlorine, and 1 lb. per lb. of alum, but this is only a guide and the use of a good comparator colourometer gives far better results.
- (d) That the free available chlorine be not less than 0.3 p.p.m. at any time. The common sources of chlorine for disinfection purposes are:
- (i) Liquid chlorine (gas) Cl_2 , made commercially by the electrolysis of common table salt, is dried, cooled and compressed into a liquid and stored in steel containers. It averages 99.9% purity. Through the use of chlorinators, the liquid passes back into a gaseous state, is metered, dissolved in water and injected into the supply to be disinfected.
 - (ii) Calcium Hypochlorite $Ca(OCl_2)$, is obtainable in either powder or granular form, and averages about 70% available chlorine.
 - (iii) Sodium Hypochlorite $Na OCl$, is made by passing chlorine gas into a caustic; it usually contains about 10% available chlorine and both types should be introduced by a hypochlorinator unit, although they may be introduced manually.

It should be appreciated that every foreign article introduced into the water, whether it be a bather or a blade of grass, will absorb a certain amount of chlorine, and that it is, therefore, essential to increase the chlorine input as the demand rises.

Algae growth is prevented by being oxidised by chlorine, but in order to introduce sufficient chlorine for this purpose, it is advisable to practice super-chlorination at least once per week, which is done by adding fairly large chlorine dosages during a night when the demand is reduced to a minimum.

- (e) That the filtration system be arranged to have a 50% to 100% top draw-off and bottom draw-off action from the deepest point of the pool. This is necessary to allow chlorinated water to be drawn down to all points of the pool, as otherwise there could be a possibility of the chlorinated and filtered water being drawn back to the filter over the surface weirs and permitting algae to flourish on the floor and the walls in the deeper sections.

3. REGULATING THE CONDUCT OF THE BATHERS.

- (a) No soap or other such substance may be introduced into the pool by the bathers.
- (b) Bathers may not wilfully foul the water, hired swimming costumes or towels, dressing rooms, etc.
- (c) No bather, suffering from any cutaneous, infectious or contagious disease may be admitted to the pool; the pool staff must be ever alert to detect any bathers who may be affected.
- (d) Animals may not be admitted. Dogs admitted into swimming pools may not only create a danger by biting bathers and causing accidents by running around wildly, but also are nuisances due to their habits of fouling the premises and increasing the noise level by barking.
- (e) Prohibition of rough or promiscuous play. Rough play or games, both within the water and on the pool level or grass surrounds, must not be permitted at any time, nor must the pleasures of any of the bathers be interfered with by any person. Promiscuous conduct must never be permitted.
- (f) Prohibition of persons under the influence of alcohol. No persons under the influence of alcohol may be admitted to a swimming pool, nor may any alcoholic beverages be brought into or consumed on the pool premises.

The provision of a reliable public address system to assist the Pool Superintendent and his assistants to carry out the abovementioned regulations, and for use during swimming galas, water polo matches, etc., should always be given serious consideration.

4. THE PREVENTION OF ACCIDENTS.

The regulations for this are essential for the safe administration of swimming pools and the main points are as follows:

- (a) The varying depths, as well as the shallow and deep ends of the pool, must be clearly indicated.

It is essential that all bathers be able to see the depths of the water at various points, not only for the benefit of the non- or less capable swimmer, but also for competent swimmers who may want to dive into the pool. Serious if not fatal accidents can happen so easily.

At this stage, I would like to point out that it has been estimated that approximately 80% of the bathers concentrate in the shallow end of the pool, while the remaining 20% possibly are making use of the deep or semi-deep sections. This factor can be fully appreciated when it is pointed out that the competent swimmers, after having completed their swimming in the deep end, will invariably join the non- or weaker swimmers in the shallow end. It is, therefore, only logical that the shallow end should be made as large as the pool dimensions permit, without unduly restricting the deep end necessary for the staging of water polo matches or for practising diving, etc.

4. THE PREVENTION OF ACCIDENTS (Cont.)

- (a) The slope of the floor at the shallow end should have gentle fall from the shallow end wall to a depth of 4'6", after which the slope may increase rapidly to the deep end depth, because the average adult is waterborne at the depth of 4'6" and the increased slope beyond this point will not be hazardous to any wading bathers.

This latest development has resulted in the Johannesburg municipality following the undermentioned pattern for the slope of the floors at the latest swimming pools or at pools which have to have the floors renewed.

To slope from a depth of 3'0" at the shallow end wall to a depth of four feet over a distance of 45% of the length of the pool, then to a depth of 4'6" over the next 10% of the length and thereafter to the desired deep end depth at an incline recommended not to exceed 30 degrees.

- (b) Adequate Depth of Water for Diving Apparatus.

Rule 107 by Federation Internationale De Natation Amateur (F.I.N.A.) prescribes that the minimum depth of water for pools constructed after the 1st May 1957, shall be 3.0 metres for a one metre-diving springboard and 3.5 metres for a three-metre diving springboard.

While it may be necessary for this ruling to apply at the South African and Provincial Championships, it would indeed be a great pity to apply this rule rigidly to all swimming pools and by the same token to introduce a hazard by disregarding it entirely.

This Department has, therefore, adopted the practice of providing diving facilities at the pools having a minimum depth of 10 feet under each diving springboard.

The one metre and three metre diving springboards should, if possible, be located alongside each other, to the measurements referred to by F.I.N.A. on one side of the deep end of the pool, if a separate diving pool has not been provided, so that only one section of the deep end area would have to be utilised by the divers, and so that the deep end pool surrounds would be free of obstruction for swimming competitors, swimming officials, water polo referees, etc.

- (c) Pool Steps Must be Provided.

Each pool should have a set of pool steps, situated in each pool corner, with suitable handrails and sufficient number of treads to permit safe and easy usage by all age groups. They should be of the removable type, for removal during swimming galas and for cleaning, and should be constructed, for preference, from polished stainless steel tubing, which will not only far outlast most other types of removable or portable pool steps, but will be of pleasing and satisfactory appearance. The greater initial cost will easily be offset by the reduced maintenance costs.

- (d) Pool must be Provided on all Sides with Handgrips.

A scum channel round the pool's periphery serves as a hand-rail for bathers as well as a means of surface draw-off, and to dampen wave-action during swimming competitions.

(d) Pool must be Provided on all Sides with Handgrips. (Cont.)

It is usual to have the surface draw-off weir points, which are inter-connected to the filtration system, located in the deep end wall, but this has not been found to be entirely satisfactory, because scum channels cannot have sufficient slope to permit the rapid draw-off to the nearest weir-point from any point in the scum channel. Mucus or any other floating scum which may have been deposited in the scum channel other than at a point near to a surface weir point would almost certainly be washed out, by wave action, back into the pool.

This difficulty has now been overcome, to a great extent, by the provision of surface weir points at each corner of the pool, with additional drainage points from the scum channelling to the weir ducting, placed at frequent intervals between each weir point.

(e) All Electrical Apparatus to be Effectively Earthed.

It is essential that all electrical apparatus be checked annually by the Electricity Department to safeguard the bathers and the Council.

(f) Lifebuys to be Provided in Readily Accessible Positions.

It is advisable to have lifebuys made readily accessible to the bathers at various points around the pool, so that a non-swimmer could, if necessary, endeavour to render assistance to a bather in difficulty.

(g) All Walk Areas to have Non-Skid Surfaces.

The pool curbing, surrounds, pathways, etc., should have non-skid surfaces to prevent bathers from slipping. Steps and stairs, similarly, should also be of non-skid design, and should, if possible, be equipped with handrails.

(h) The Premises, Surrounds and Apparatus to be Maintained in Good Repair.

It is understandable that the swimming pool's premises, surrounds, apparatus, etc., are not only used extensively by many thousands of bathers each year, but are also subjected to rapid and frequent changes in temperature, all of which cause damage and the need for repair. The repairs to the buildings, etc., may be carried out in the swimming season if the need arises, although this could present difficulties and it is, therefore, advisable that the maintenance programme be carried out during the closed season. However, the inspection of and the need for any repairs to the pool walls, piping system and floor must be carried out during the closed season, and the pool must, therefore, be drained each closed season for inspection purposes.

(i) Prohibition of Glass Bottles.

This regulation is necessary because the fragments of glass from only one broken bottle could be the cause of injury to and complaints from numerous bathers. The removal of glass fragments from pool surrounds is difficult, but their removal from the pool may only be done by vacuum sweeper operation or pool drainage.

(j) Adequate First Aid Supplies and Resuscitation Apparatus.

Adequate first aid supplies for the treatment of injured persons must be on hand at each pool. Swimming pool male personnel are required to be competent in lifesaving and first aid. Each pool is equipped with a modern, fully automatic resuscitator unit, complete with all accessories and a spare oxygen cylinder, for the resuscitation of the apparently drowned. Personnel are trained in their use and in addition, are trained in the application of the expired air method of artificial respiration. The training in the application of the expired air method is necessary so that artificial respiration may be commenced as soon as possible without loss of valuable time while the automatic device is either brought to the scene or the patient is taken to the first aid room. The need for immediate ventilation to the lungs of the apparently drowned will be appreciated by the fact that it is understood that the brain of a human being will in all probability suffer irreparable damage if it is starved of the vital oxygen for a period longer than four minutes - far too short a period of time to waste or use while taking the patient to a comfortable bed in the first aid room.

GENERAL.

Swimming clubs are permitted to stage their club swimming events on a club night once per week from 7.30 p.m. to 8.45 p.m. Scheduled inter-club swimming league fixtures on Friday evenings from 7.30 p.m. to 9.00 p.m., a weekly water polo practice period of one hour during a quiet period on a weekday evening, and to play off any scheduled water polo matches on Saturday afternoons between the hours of 2.30 p.m. and 5.00 p.m., depending on the number of games scheduled.

A period of fifteen minutes must be allowed between each match to allow the members of the general public to make use of the deep water area.

The staff are instructed to switch off the filtration plant at least one hour before the commencement of any swimming gala, club swimming event or inter-club swimming league fixture, to allow sufficient time for any currents which may have been created by the filtration plant inlet ports, to subside.

Starting blocks, if available, must be firmly installed and the floating racing lane ropes fitted in place well before the commencement of any swimming competition.

Lawn Grass Cuttings.

Wide expanses of beautifully green grassed verges at swimming pools are a most pleasing sight and essential for the enjoyment of the bathers, but grass cuttings can play havoc with the filtration plant system. Dry grass at the beginning of each swimming season or grass cuttings which may not have been completely picked up by the lawnmowers present problems by being carried into the pools on the wet bodies of the bathers. This grass, in addition to needlessly absorbing chlorine, also chokes the strainer units situated before the pumps and clogs up the filter beds, thus reducing the turnover rate of the filters and necessitating the pool staff having frequently to neglect the bathers in the pool in order to clean the filters.

Lawns, therefore, should always be well swept and top-dressed in good time before the commencement of each swimming season and steps taken to ensure that grass cuttings are not permitted to be left by the lawn mowing machines. The unboxed type of mower should never be used at swimming pools.

CONCLUSION.

In conclusion, I wish to state that I consider that swimming pool personnel, particularly the new entrants to the service, should be given a course of instruction which should include training in the correct operation of filtration plants, water purification, chemical application, swimming pool administration, local by-laws, staff control, lifesaving, artificial respiration, etc.

The Parks and Recreation Department has had such a course in operation for the past three years, with excellent results, but I feel that all local authorities should endeavour to introduce a similar course, or better still, that a South African Association of Swimming Pool Superintendents similar to the overseas institution in London and Rhodesia should be formed and that all Pool Superintendents and Supervisors should be encouraged to enrol and become accepted as members by examination.

DIE HIGIËNE EN BEHEER VAN SWEMBADDENS.

E.A. LEAN : HOOF - SUPERINTENDENT - SWEMBADDENS EN
WATERVERSIERINGS - AFDELING PARKE EN
ONTSPANNING. JOHANNESBURG.

Inleiding:

Meneer die President, Dames en Here,

Ek dank u vir die eer om op hierdie konferensie n referaat te lewer en dit is vir my aangenaam om u vandag te kan toespreek oor die higiëne en beheer van swembaddens.

Alle publieke swembaddens moet gekontroleer word deur n plaaslike owerheid en in die geval van Johannesburg is hierdie owerheid die Stadsraad van Johannesburg.

Die vereistes waaraan hierdie munisipale swembaddens en kinderswembaddens moet voldoen, kan onder vier hoofpunte saamgevat word - elkeen van hierdie vier sal breedvoerig in hierdie referaat behandel word.

- a) Toereikendheid en sindelikheid van kleedkamers.
- b) Versekering van suiwerheid van die water in die swembaddens.
- c) Uitoefening van beheer oor gedrag van swemmers.
- d) Voorkoming van ongelukke.

Die Afdeling Parke en Ontspanning beheer die swembaddens vir gebruik deur persone van Blanke afkoms, terwyl swembaddens vir gebruik deur nie-Blankes onder die Afdeling nie-Blanke Sake ressorteer.

Aangesien ek in diens van die Afdeling Parke en Ontspanning is, is hierdie referaat dus hoofsaaklik gebaseer op die beheer en bestuur van swem- en plasbaddens (paddling pools) in die genoemde Afdeling van die Johannesburgse Stadsraad.

KORTLIKSE BESKRYWING:

Die afdeling het beheer oor 15 hoofswembaddens, 11 distrikswembaddens, 11 plasbaddens in parke en 2 waterspeelplekke (water playland features) vir kinders met n verdere Olimpiese en distrikswembad in aanbou.

Toegangsgeld is betaalbaar by die hoofswembaddens - sluit in Olimpiese standaard swembaddens en swembaddens wat onderdak gebou is, met ander woorde dié swembaddens wat vir kompetisie doeleindes gebruik kan word - en die gewone voorstedelike swembaddens wat gewoonlik nie vir kompetisie doeleindes geskik is nie. Elkeen van hierdie tipe swembaddens word voorsien van die volgende personeel: 1 Superintendent, 2 opsigters (slegs een by elk van die voorstedelike swembaddens), vroulike

opsigters/kassiers, gesubsidieerde Blanke manlike arbeiders en Bantoe skoonmakers.

Distrikswembaddens is toegangsvry en het slegs n diepte van 2 tot 4½ voet met n wateroppervlak van n derde tot tweederdes van die streekswembaddens en n waterinhoud van tussen 20,000 en 100,000 gellings. Hierdie kinderswembaddens is geleë in voorstedelike parke waar daar nie n hoofswembad in die onmiddellike omgewing is nie. Hierdie tipe swembad is hoofsaaklik, dog nie eksklusief nie, vir gebruik deur kinders.

Hierdie kinderswembaddens is voorsien van kleedkamers, stortbaddens en toilet geriewe, maar daar is egter geen voorsiening vir die bewaring van klere, persoonlike besittings, huur van swemklere of handoeke ensovoorts nie en elke swemmer moet dus sy eie besittings oppas.

Elke distrikswembad het n Superintendent vir die beheer van die swemmers en vir die chemiese behandeling van die water en n Bantoe vir die skoonmaak van die perseel.

Plasbaddens in parke dwarsdeur die stad is taamlik groot, vlak en toegangsvry en dit is daargestel vir gebruik deur strompelaartjies (toddlers) en klein kinders.

Die kinders se waterspeelplekke is n kombinasie van plasbaddens, wateryglybane en spuitfontejntjies. Hierdie speelplekke word voorsien in digbewoonde voorstede soos Yeoville en Hillbrow en verskaf oneindige plesier, nie net aan kinders in dié twee voorstede nie, maar ook aan kinders van ander voorstede wat hierheen kom.

Ek wil nou graag in nadere besonderhede ingaan op die administratiewe vereistes.

1. TOEREIKENDHEID EN SINDELIKHEID VAN KLEEDKAMERS.

a) Voorsiening van voldoende kleedgeriewe.

Kleedgeriewe moet voldoende wees en bereken word op maksimale bywoningsyfers. Daar moet egter in gedagte gehou word dat alhoewel die bywoningsyfers van mans dié van vrouens oorskry, vereis vrouens meer privaathed as mans. Die bywoningsgetalle van kinders oorskry dié van volwassenes in dieselfde mate as in eersgenoemde geval. Hierdie verhouding is ongeveer 60% tot 40% in beide gevalle.

b) Voorsiening van n genoegsame aantal stortbaddens en toiletgeriewe.

Aangesien dit moeilik is om die verwagte bywoningsgetalle by n voorgestelde publieke swembad te beraam, is dit goed om statistieke verkry van swembaddens in soortgelyke omstandighede, te vergelyk en dan die bygaande formule te gebruik vir die berekening van die minimum aantal stortbaddens, toiletkamers en urinale wat voorsien moet word.

<u>Aantal en soort fasiliteit.</u>	<u>Aantal manlike persone per fasiliteit-gebaseer op maksimum bywoningsgetalle.</u>	<u>Aantal vroulike persone per fasiliteit-gebaseer op maksimum bywoningsgetalle.</u>
1 Toiletkamer per	120	80
1 Stortbad per	120	80
1 Urinaal per	120	3/.....

n Swembad waar dus maksimale bywoningsgetalle van n 1,000 per dag verwag word, met n verhouding van 60% mans tot 40% vrouens, sal die volgende vereis: 5 toiletkamers en stortbaddens vir elke geslag plus urineerplek vir vyf volwasse mans.

Mure van stortbaddens, toiletkamers en urinale moet liefs tot n hoogte van ses voet bo die vloer met geglaseerde teëls bedek word - dit beperk vandalisme tot n minimum en is baie maklik om skoon te maak.

Dit is verkieslik dat hierdie fasiliteite so gebou moet wees dat wanneer n persoon sy swemklere aangetrek het, hy eers verby die stortbaddens en dan verby die toiletkamers moet gaan om by die swembad te kom. Stortbaddens moet ook voorsien word van seep en elke persoon moet aangemoedig word om n stortbad te neem voordat hulle gaan swem.

c) Om te verseker dat die gange in die kleedkamers wyd genoeg is sodat maksimum toelaatbare ruimte, sonlig en kruisventilasie verkry kan word.

d) Om te verseker dat voldoende kruisventilasie na al die kleedkamers, bewaarkamers en toiletkamers beskikbaar is.

e) Om te verseker dat vloere van die gange, kleedkamers, bewaarkamers ensovoorts voorsien word van n glyvaste tipe materiaal wat maklik skoongemaak kan word. Die helling van die vloere moet genoegsaam wees sodat die water vinnig sal afloop. Plekke wat gedurig klam is mag die groei van seewier (algae) bevorder en dit doen nie alleen afbreuk aan die skoonheid van die swembad nie maar kan ook by almal kommer wek.

f) Om te verseker dat die ontwerp van klerehangers en mandjies waarin swemmers hulle klere in die bewaarkamer laat, van so n aard is dat goggas hulself nie maklik daarin kan vestig nie. Hierdie kleremandjies moet ook n aparte vak hê vir skoene sodat besmetting en bevuiling van klere nie kan plaasvind nie. Dit moet van n duursame materiaal gemaak wees om die ruwe behandeling van die publiek te weerstaan en dit moet gewas en ontsmet kan word deur dit geheel en al in n reinigingsmiddel te dompel sonder dat dit sal roes of nodig sal wees om dit oor te verf. Hierdie reiniging moet gereeld uitgevoer word.

g) Om te verseker dat die sitplekke en die vloere van die kleehokkies en kleedkamers daaglik gewas en ontsmet word met n chlooroplossing van 0.3 tot 0.6%.

Hierdie ontsmetting moet ook elke keer na die besoek van n groep skoolkinders, wat vir swemlesse na die swembad kom, herhaal word - sodoende sal die volgende groep kinders die geriewe vars en skoon aantref.

Kinders urineer dikwels op die kleedkamer se vloere terwyl hulle verklee met die hoop dat die water wat van hulle liggame en swemklere afloop en met die urine meng, sal verhoed dat hulle opgelet word.

Daar mag miskien aangevoer word dat al hierdie voorsorgmaatreëls oordrewe en onnodig is, maar verskeie outoriteite op die gebied van swembad higiëne het daarop gewys dat onhigiëniese kleedkamers fungi, impertigo, skurfsiekte, velsiektes, ensovoorts kan huisves. n Kaal anus op die sitplek in n kleedkamer kan veroorsaak dat n kind die parasitiese wurm Oxyuris vermicularis opdoen of amebiese siste ontwikkel.

Swemmers is in elk geval altyd dankbaar as die kleehokkies en kleedkamers skoon gewas en ontsmet is.

h) Om te verseker dat elke kleehokkie of kleedkamer voorsien is van die vereiste aantal staanplanke (footboards) wat vry van insekte is en wat daaglik gewas en ontsmet word. Hierdie staanplanke mag nie geverf word nie want dit verbloem dikwels net die swak toestand daarvan.

i) Om te verseker dat daar n voldoende aantal vullisbakke met skanierdeksels - om vlieë weg te hou en die inhoud te versteek - by elke swembad beskikbaar is.

j) Die voorsiening van voetbaddens by die ingange tot die swembad gebied en die gereelde ontsmetting hiervan met n chlooroplossing van 0.3 tot 0.6%. Hierdie ontsmetting kan met die hand gedoen word, maar dit is meer doeltreffend as die voetbaddens onderling en met n filtrasiesisteen, wat n aanbevole deursyferingstempo van 4 tot 6 keer per uur het, verbind is.

k) Die verskaffing van klerehake teen die mure van elke gemeenskaplike kleedkamer. Hierdie hake moet 15" tot 18" van mekaar wees sodat klere van leerlinge wat die swemlesse bywoon nie teen mekaar hang nie, want weens gebrek aan tyd kan hulle nie klere by die bewaarkamers inhandig nie.

l) Om te verseker dat die swemklere en handoeke wat deur die publiek gehuur word, deeglik gewas, ontsmet, gedroog en belug word voordat dit uitgegee word. Dit is veiliger om kledingstukke wat nie behoorlik skoongemaak is nie te weier as om die gevaar van oordrag van infeksie te loop.

2. VERSEKERING VAN SWEMBADWATER SE SUIWERHEID.

Die gehalte van water in die swembad moet altyd so na as moontlik die standaard van drinkwater handhaaf. Dit kan slegs gedoen word deur middel van n filtrasiesisteen met die nodige apparaat vir die toediening van chemikalië en ontsmetting. Bogenoemde moet aan die volgende spesifikasies voldoen:

a) Die deursyferingstempo van groot opelug swembaddens moet nie langer as 6 uur duur nie. Die vereiste vir binnehuisse swembaddens is vier uur mits, in albei hierdie gevalle, die hoeveelheid gefiltreerde water wat elke 24 uur bygevoeg word, nie minder as 500 gallon per swemmer is nie.

Dit beteken dat n filterapparaat wat 24 uur aanmekeer werk en met n deursyferingstydperk van ses uur, sal binne 24 uur al die water in die swembad n totaal van 4 keer deur die filtertenks laat gaan. In die geval van n filtrasie apparaat met n deursyferingstydperk van 4 uur sal die water ses keer deur die filtertenks gaan. Teen n tempo van 500 gellings per swemmer per 24 uur sal n maksimum van 4,000 swemmers gebruik kan maak van n swembad met n inhoud van 500,000 gellings. Dienooreenkomstig sal 2,000 swemmers gebruik kan maak van n opelug swembad met n waterinhoud van 250,000 gellings.

Op hierdie grondslag sal plasbaddens of die gewilde waterpretbaddens (playland water features) met hulle klein waterinhoud van 3,000 tot 5,000 gellings, n deursyferingstydperk

van n uur of minder moet hê. Hierdie vinnige deursyferings-tydperk is nodig omdat n vlak swembad met n klein waterinhoud gou-gou al die babas en strompelaartjies (todlers) lok wat nie alleen enige beheer oor hulle behoeftes kan uitoefen nie, maar ook vatbaar is vir allerhande siektes. Terwyl die kinders in die water rondplas, is dit dan ook vir hulle baie prettig om allerhande vreemde voorwerpe en materiaal in die water te gooi wat n verdere las vir die filterapparaat is.

b) Die deursyferingstempo per vierkante voet filter area per minuut is as volg:

- (i) Vir sneldruk sandfilters - Vanaf drie, maar nie meer as vyf gellings per minuut nie.
- (ii) Diatomiese grondfilters - nie meer as 1 gelling per minuut nie.

c) Die pH van die water moet tussen 7.2 en 7.6 gehandhaaf word. Wanneer die pH van die water minder as 7.0 is, is die water suuragtig en veroorsaak dat swemmers ongerief moet verduur, foutiewe flokkulasie en laat metaalwerk roes. n Lae pH word veroorsaak deur die toediening van chloorgas, aluin, urinering, sweet, ensovoorts. n Lae pH kan verhoog word deur toediening van soda-as (1.2lb. per lb. chloorgas) en 1 lb. per lb. aluin. Hierdie formule dien slegs as leiding - die gebruik van n goeie kleurmeter lewer baie beter resultate.

d) Daar moet toegesien word dat vrychloor nooit minder as 0.3 p.p.m is nie.

Algemene chloorbronne vir ontsmettings doeleindes:

(i) Chloor vloeistof (gas) Cl_2 , wat kommersieel vervaardig word deur die elektrolise van gewone tafelsout, verdroog, verkoel en saamgepers word tot n vloeistof en bewaar word in staal silinders (99.9% suiwer). Daar word gebruik gemaak van chlorineerders om die vloeistof weer in gas om te sit, die gas te meet, dit in water op te los en dan na die watertoevoer wat ontsmet moet word, te voer.

(ii) Kalsium Hipochloraat $Ca(OCl)_2$ is verkrygbaar in poeier en in korrelvorm en bevat ongeveer 70% beskikbare chloor.

(iii) Natrium Hipochloraat $Na OCl$, word vervaardig deur chloorgas deur Natrium hidroksied ($NaOH$) te lei. Dit bevat gewoonlik 10% beskikbare chloor en albei soorte behoort deur middel van n hipochlorineerder toegedien te word, alhoewel dit ook met die hand gedoen kan word.

Daar moet onthou word dat enige voorwerp (swemmers, gras ensovoorts) n sekere hoeveelheid chloor absorbeer en daarom is dit belangrik dat die toediening van chloor vermeerder word na gelang van omstandighede.

Die vorming van seewier word verhoed deurdat dit deur die chloor geoksideer word, maar om hierdie taak doeltreffend te verrig, moet daar ten minste een keer per week n oormaat chloor toegedien word, verkieslik gedurende die nag.

e) Die filtrasiesisteen moet so ingestel wees dat daar n 50-100% weglei-aksie bo-op die water en op die bodem van die

swembad, vanaf die diepste punt is. Hierdie voorsorg is nodig sodat gechlorineerde water alle dele van die swembad kan bereik, want die moontlikheid bestaan dat die gechlorineerde en gefiltreerde water teruggesuijg kan word na die filtreerder met die gevolg dat seewier op die vloer en mure van die dieper dele sal floreer.

3. KONTROLERING VAN SWEMMERS.

- a) Geen seep mag in die swembad gebruik word nie.
- b) Swemmers mag nie die water, gehuurde swemklere of handoeke, kleedkamers, ensovoorts opsetlik bevuil nie.
- c) Geen swemmer wat enige velsiekte onder lede het of aan enige aansteeklike siekte lei, mag gebruik maak van die swembad nie.
- d) Diere word nie toegelaat nie. Honde by n swembad is nie alleen gevaarlik omdat hulle mense kan byt nie, maar hulle veroorsaak ook ongelukke as gevolg van hulle rondhardlopery. Honde is ook n oorlas omdat hulle die terrein bevuil en die mense steur met hulle geblaf.
- e) Ruwe en wilde speletjies moet verbied word. Sulke speletjies, in die water en op die grasoppervlakte, moet streng verbied word. Geen persoon mag toegelaat word om hom met n ander se plesier in te meng nie. Onbehoorlike gedrag moet nooit toegelaat word nie.
- f) Verbod op persone onder invloed.

Geen persoon onder invloed van alkoholiese drank mag tot die terrein toegelaat word nie. Geen alkoholiese drank mag ingebring of op die terrein gebruik word nie.

Waar moontlik moet luidsprekers aangebring word om die Superintendent en sy helpers se taak te vergemaklik wat bogenoemde reëls betref, aankondigings met swembyeenkomste, waterpolo wedstryde, ensovoorts.

4. VOORKOMING VAN ONGELUKKE.

Regulasies, met die doel om ongelukke te verhoed, is essensieel:

- a) Die verskillende dieptes, asook die vlak en diep kante, moet duidelik aangetoon word.

Dit is belangrik dat alle swemmers instaat moet wees om die diepte van die water op verskeie plekke te kan sien. Hierdie reëling is nie alleen tot voordeel van die swak swemmer of die persoon wat gladnie kan swem nie, maar dit is ook nodig vir goeie swemmers wat in die swembad wil induik. Ernstige ongelukke kan baie maklik gebeur.

Graag wil ek hier aantoon dat volgens berekening 80% van die swemmers gebruik maak van die vlak kant, terwyl slegs 20% gebruik maak van die diep kant. Hierdie verskynsel is maklik om te verklaar, want sodra n goeie swemmer genoeg geswem het in die diep kant, sluit hy aan by die minder goeie swemmers in

die vlakker deel van die swembad. Om hierdie rede moet die vlak gedeelte van die swembad so groot as moontlik gemaak word sonder om die diep deel van die swembad af te skeep, want hier moet waterpolo wedstryde gespeel word en die water moet diep genoeg wees vir persone wat duike wil oefen. Die helling van die vloer moet vanaf die vlak kant se muur baie geleidelik tot op n diepte van 4'6" toeneem. Na hierdie diepte maak dit nie meer saak hoe vinnig die helling tot teen die muur, by die diep kant, daal nie, want die meeste volwassenes begin op hierdie diepte te drywe en die skerp helling is dus nie meer n gevaar vir swak swemmers wat daar rondloop nie.

As gevolg van hierdie jongste ontwikkeling gebruik die Johannesburgse munisipaliteit die ondergenoemde helling vir alle nuwe swembaddens of waar n swembad van n nuwe vloer voorsien moet word.

Vanaf die vlakkant, met n diepte van 3'0", daal die diepte na 4'0" oor n distansie wat 45% van die swembad se lengte insluit. Oor die volgende 10% van die lengte van die swembad daal die vloer na 4'6" en daarna daal dit teen n helling wat nie 30° oorskry nie tot by die muur aan die diep kant.

b) Diepte van water vir duik.

Reël 107 van die Internasionale swemfederasie (F.I.N.A.) skryf die volgende voor vir swembaddens gebou na die 1ste Mei, 1957: Diepte onder duikplank van 1 meter - 3.0 meter en diepte onder duikplank van 3.0 meter - 3.5 meter.

Hierdie reël word streng nagevolg vir die Suid Afrikaanse en Provinsiale kampioenskappe maar dit sal jammer wees as die reël streng toegepas moet word by alle swembaddens, maar vir dieselfde waarde n gevaar daar te stel deur dit geheel en al te verontagsaam.

Hierdie afdeling maak dus voorsiening vir duik by daardie swembaddens waar die water onder elke springplank ten minste 10 voet diep is.

Die een meter en drie meter duikplanke moet indien moontlik, langs mekaar aan die een kant van die diep gedeelte geplaas word en die diepte van die water daaronder moet voldoen aan F.I.N.A. vereistes as n aparte duikpoel nie beskikbaar is nie. Sodoende sal slegs een kant van die diep gedeelte van die swembad deur die duikers gebruik word - terwyl die res van die diep gedeelte gebruik kan word deur swemmers, swembeamptes, waterpolobeamptes, ensovoorts.

c) Swembadtraplere moet voorsien word.

Elke swembad moet voorsien wees van n stel traplere - een in elke hoek van die swembad. Die traplere moet voorsien wees van relings en genoeg sporte sodat dit met veiligheid deur alle ouderdomsgroepe gebruik kan word. Die traplere moet van dié tipe wat verwyder kan word wees - dit moet maklik verwyder kan word vir swembyeenkomste en die skoonmaak daarvan.

Dit is verkieslik dat sodanige traplere uit vlekvrre staal vervaardig moet word - dit is meer duursaam as enige ander materiaal en lyk ook baie mooier. Die lae instandhoudingsonkoste sal heel gou goed maak vir die aanvanklike hoër onkoste.

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d) Voorsiening van handgreep aan kante.

Die skuimkanaal in n swembad dien nie alleen as sodanige handgreep nie, maar help ook met die wegleiding van afval vanaf die wateroppervlakte en werk ook die vorming van branders teë gedurende swembyeenkomste.

Gewoonlik word die oppervlak afleidingspunte, wat verbind is met die filtrasiesisteam, in die muur aan die diep kant ingebou, maar daar is gevind dat hierdie plasing nie so doeltreffend is nie. Die rede hiervoor is dat die skuimkanaal nie genoeg val gegee kan word om n vinnige wegleiding na die naaste afleidingspunt te veroorsaak, vanaf enige deel in die skuimkanaal nie. Slym of enige ander voorwerp wat nie na aan n afleidingspunt in die skuimkanaal te lande kom nie, sal dus deur die branders teruggespoel word in die swembad in.

Hierdie probleem is tot n groot mate oorkom deur die afleidingspunte in elke hoek van die swembad in te bou met bykomende dreineringspunte tussen elke twee afleidingspunte uit die skuimkanaal na die wegleipype van die afleidingspunte

e) Alle elektriese apparaat moet doeltreffend geaard wees.

Dit is belangrik dat alle elektriese apparaat jaarliks ondersoek word deur die Elektrisiteitsafdeling sodat ongelukke voorkom kan word.

f) Reddingsgordels moet maklik bekombaar wees.

Dit is raadsaam om reddingsgordels in die nabyheid van die swembad gereed te hê sodat selfs n persoon wat nie kan swem nie, iemand wat in die moeilikheid beland kan help.

g) Oppervlakte waar geloop word moet voorsien wees van n antiglyloopvlak.

Die kantstene van die swembad omgewing en voetpaadjies moet n antiglyloopvlak hê, wat sal verhoed dat swemmers gly. Traplere en trappies moet soortgelyke oppervlakte hê en ook voorsien wees van relings.

h) Die swembadterrein en apparaat moet goed instand gehou word.

Dit is verstaanbaar dat die swembadterrein en apparaat wat jaarliks deur duisende swemmers gebruik word en daarbenevens blootgestel is aan temperatuurwisselings, tot n sekere mate beskadig en dus herstel moet word. Herstelwerk aan geboue, ensovoorts kan, as dit nodig is, gedurende die swemseisoen uitgevoer word, maar dit kan probleme oplewer en dit is dus raadsaam dat alle herstelwerk gedurende die winter verrig word. Dit is egter essensieel dat inspeksie en herstelwerk aan die mure, pype en die vloer van die swembad gedurende die winterseisoen gedoen moet word. Vir sodanige inspeksie moet die swembad gedurende die wintermaande leeggemaak word.

i) Verbod op enige glas bottels.

Hierdie regulasie is nodig aangesien die stukkie glas van slegs een gebreke bottel die oorsaak kan wees dat baie swemmers beserings opdoen. Die verwydering van glasskerwe van die swembadterrein is n moeilike taak maar uit die swembad self kan dit slegs verwyder word deur stofsuieraksie of

deur die swembad leeg te maak.

j) Voldoende eerstehulp voorrade en n resussitator.

Voldoende eerstehulp voorrade vir die behandeling van be-seerde persone moet by elke swembad beskikbaar wees. Manlike personeel by swembaddens moet bevoeg wees in lewensredding en eerstehulp. Elke swembad is toegerus met n moderne, ten volle outomatiese resussitator met volledige toebehore en n spaar suurstofsilinder vir die resussitasie van persone wat vermoedelik verdrink het. Die swembad personeel is opgelei in die gebruik van die apparaat en kan ook mond tot mond kunsmatige asemhaling toepas. Hierdie metode van kunsmatige asemhaling is nodig sodat kunsmatige asemhaling so gou as moontlik toegepas kan word en daar nie kosbare tyd verlore gaan terwyl die outomatiese apparaat gehaal word of terwyl die pasiënt na die siekekamer gedra word nie. Die belangrikheid van onmiddellike kunsmatige asemhaling sal ingesien word as daar in gedagte gehou word dat die menslike brein ernstige beskadiging opdoen indien dit vir n tydperk van vier minute sonder suurstof moet fungeer. Daar is dus nie tyd om die pasiënt na n gemaklike bed in die siekekamer te dra nie.

ALGEMEEN.

Swemklubs word toegelaat om hulle klubbyeenkomste een keer per week in die aand vanaf 7.30 nm. tot 8.45 nm. te hou. Liga swemwedstryde word op Vrydagaande vanaf 7.30 nm. tot 9.00 nm. en waterpolo oefeninge vir n uur op n stil weekaand toegelaat. Waterpolo wedstryde word Saterdagmiddae vanaf 2.30 nm. tot 5.00 nm. afgespeel.

Tussen elke wedstryd moet die publiek egter n tydperk van 15 minute gegun word om gebruik te maak van die dieper gedeelte van die swembad.

Die Superintendent moet ten minste n uur voor enige swembyeenkoms die filtreerder afskakel sodat daar genoeg tyd sal wees vir enige strominge, wat veroorsaak word deur die instroming van water, om te bedaar.

Wegspringblokke, indien beskikbaar, moet stewig wees en die drywende toue om die verskillende bane aan te toon moet n geruime tyd voor die byeenkoms opgerig word.

Afgesnyde gras.

Die groen grasperke rondom n swembad skep n baie mooi indruk en is belangrik vir die swemmers om op rond te baljaar, maar die gesnyde gras kan baie moeilikheid veroorsaak in die filtrasiesisteam. Droë gras aan die begin van die swemseisoen of gesnyde gras wat nie deur die grassnyer opgetel is nie, verteenwoordig n probleem, aangesien dit deur middel van die swemmers se nat liggame in die water ingebring word. Afgesien van die feit dat hierdie gras onnodig chloor absorbeer, versper dit die sifeenhede wat voor die pompe geïnstalleer is en verhoed ook die doeltreffende werking van die filters sodat die deursyferingstempo van die filters daal. Dit veroorsaak dat die Superintendent heelwat aandag aan die filters moet skenk, terwyl hy die toesig van swemmers in die swembad afskep.

Grasperke moet dus lank voor die seisoen begin, gegee en

bobemes word. Daar moet ook voorsorg getref word dat gesnyde gras nie op die grasperk bly lê nie. Die tipe grassnyers wat nie self die gesnyde gras optel nie, moet in elk geval nie by n swembad gebruik word nie.

Gevolgtrekking.

Om mee af te sluit wil ek graag meld dat ek voel dat alle swembad personeel, veral nuwe lede, opleiding in die volgende fasette van swembadwerk gegee moet word: werking van filtreerders, suiwering van water, toediening van chemikalië, swembad-administrasie, plaaslike regulasies, personeel beheer, lewensredding en kunsmatige asemhaling.

Die Afdeling Parke en Ontspanning het die afgelope drie jaar n sodanige kursus met uitstekende resultate aangebied, maar ek voel dat alle munisipaliteite hierdie voorbeeld moet navolg. Die stigting van n Suid-Afrikaanse vereeniging vir swembad-superintendente is natuurlik die aangewese oplossing. Alle Superintendente en swembad-opsigters moet dan aangemoedig word om deur middel van n kwalifiserende eksamen lede te word.

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