



Environmental spraying when and where? **Prof S Mehtar- ICAN**

Preventing and controlling transmission of **COVID 19 infection**









How does the SARS-CoV2 virus spread?

This is crucial information for applying the correct IPC procedures and ensuring safety of you and your patients.



Figure 1: Illustrating the difference between the distance travelled between droplet and airborne after aerosol generation through coughing or sneezing

The virus is not spread through contaminated feet, wagon wheels, or horse manure. IT SPREADS BY DROPLETS AND CONTACT!

Spraying the environment- when is it useful

High-volume spraying, fogging, or misting is used to advantage where the target is mosquitoes threatens the health of the local population

- Yellow fever
- Dengue
- Zika
- Malaria



The approaches are two-fold:

- (1) larvicidal application to surface water with a very thin oil to eliminate the development of mosquito larvae, and
- (2) adulticide application, where this type of spraying is used on bushes and grassy areas, or (in the case of the four diseases listed), inside houses where the mosquito is found during the day.

This application was considered environmentally damaging, but mosquito eradication programs were effective. It has been banned in most countries

Spraying the buildings? Not useful

https://www.nomoredisinfectiontunnels.com/news



Applying misted disinfectant to the street, pavement, footpath, is similarly **a waste of time, effort and money.**

BEIJING, March 2 (Xinhua) -- Excessive disinfection should be avoided in China's ongoing fight against the novel coronavirus epidemic, as the effect of disinfection should be prioritized, a health expert said here Monday.

Zhang Liubo, a researcher at the Chinese Center for Disease Control and Prevention, made the remarks at a press conference, saying that methods of large-scale disinfection such as spraying disinfector with mist cannon trucks and drones are overdone.

A series of guidelines on disinfection techniques have been published amid enhanced popularization of knowledge on disinfection among the public, he continued, citing a circular on the disinfection during the outbreak of COVID-19, which was released Saturday by a working group of the joint prevention and control mechanism of the State Council.

The circular listed a number of conditions where disinfection should be limited, such as no large-scale disinfection outdoors, no outdoor disinfection in rains or snows and no air disinfection outdoors.

It also warned against spraying disinfector against persons, putting disinfector in ponds, reservoirs or artificial lakes, as well as indoor air disinfection in the presence of someone else.

Disinfectant tunnels



APP39-06

PESHAWAR: April 06 - A person walking through spray corridor to prevent from corona virus, a walk through facility installed outside PDMA building on test bases. The facility will be extended to other Government buildings and other places as well. APP Photo by Shaheryar Anjum

Directorate of Health and Family Welfare, Punjab Parivar Kalyan Bhavan Sector 34 A, Chandigarh Dated, 13/4/2000 Chandigarh:

IDSP/PB/2020/2548-91

To

All Deputy Commissioners, Punjab

All Civil Surgeon

Punjab

Subject:- Regarding hypochlorite spay tunnels

Regarding above mentioned subject, it is submitted that some districts have set-up hypochlorite spray tunnels for disinfection of people. An advisory issued by WHO states that spraying disinfectants like alcohol or chlorine all over body does not kill the virus rather can be harmful for clothes or mucous membranes. Hypochlorite solution is recommended for disinfection of surfaces and instruments. Moreover, disinfection tunnels will create a false sense of security and people may be diverted from hand wash to disinfection Tunnel. Under the above circumstances, it is recommended that disinfection

tunnels should not be installed and used.

Director Health and Family Welfare, Punjab

IDSP/PB/2020/ 25 92-97

Dated, 13/4/20 20 Chandigarh:

Copy:

OSD to Chief Secretary PA to PSHFW, Punjab PA to MD, NHM, Punjab PA to MD, PHSC

Director Health and Family Welfare, Punjab

Using spray of chlorine

- Spraying particularly with chlorine is dangerous and illegal
- Humans should never be sprayed with chlorine

• The evidence.....





Deliberate exposure to chlorine spraying- Ebola

Table 2 Chlorine spraying in the three groups

Site	HCW		EVD		NEVD	
Total interviewed	500		550		500	
Not sprayed (excluded)	7		0		23	
Total analysed	N=493	%	N = 550	%	N = 477	%
In own house (under quarantine)	9	2	0	-	440 0	92
Outside in the community	0	-	0	-	21	4
Pre transfer	0	-	162	30	15	3
Back of ambulance	61	12	547	<i>9</i> 9	38	8.0
Leaving ETU			550	100		
Red zone	455	93	120	22		
Spray others	113	23				
In room when spraying other	rs 116	24				
EVD case house	16	3				
EVD suspect house	33	7				

HCW = healthcare workers; EVD = Ebola virus disease survivors; NEVD = non Ebola cases **Table 5** Adverse events in HCW with single and multiple chlorine exposure compared

Characteristic	Single Cl ₂ exposure (N= 285) n(%),	Multiple Cl_2 exposure (N = 208) n(%)	P-value
Eye sight problem before	19 (7)	25 (12)	0.04
Eye sight problem now	95 (34)	123 (59)	<0.001
Coughing	107 (38)	124 (60)	0 · 001
Cough producing sputum	43 (15)	60 (29)	<0.001
Difficulty in breathing	66 (23)	100 (48)	<0.001
Chest tightness	109 (38)	131 (63)	<0.001
Burning throat	85 (30)	112 (54)	<0.001
Skin irritation	95 (34)	109 (52)	<0.001

Mehtar et al. Antimicrobial Resistance and Infection Control (2016) 5:45 DOI 10.1186/s13756-016-0144-1

Effect of chlorine spraying on HCW while wearing PPE

Table 6 Category of staff and use of PPE and adverse events

 reportedDSO district social officer, CHO community health officer

Job categories $n = 293$		Eye PPI		Skin Pf	E	Clinical symptoms		
Categories	n	Always	not always	always	not always	eye	chest	skin
Doctor	7	5	2	5	2			
Nurse	224	183	41	199	25	ns	0 · 05	ns
Hygienist	231	188	42	213	18	ns	ns	0.001
Pharmacist	6	5	1	5	1			
DSO	4	3	1	4	0			
СНО	4	4	0	4	0			
Lab technician	17	16	1	16	1			

HCW significantly higher chest symptoms than Ebola survivors

Condition	HCW	Ebola Survivors	P value
Еуе	45.0%	55.0%	<0.01
Chest	66.4%	33.6%	<0.01

Major respiratory damage in HCW & the population despite wearing PPE

Toxic effects of chlorine

- Chlorine poisoning can occur when you swallow or inhale chlorine.
- It reacts with water inside and outside of the body (such as the water in your digestive tract) to form hydrochloric acid and hydrochlorous acid. Both of these substances are extremely poisonous.
- Symptoms of this problem can include changes in the acid levels of your blood.
- Chlorine exposure can also cause low blood pressure.





CrossMark

Major Article

Health problems and disinfectant product exposure among staff at a large multispecialty hospital



Disinfectant Product Use

Fig 1. Prevalence of work-related symptoms by disinfectant product use at a hospital, August 2015. Work-related symptoms were defined as symptoms that improved away from the facility, either on days off or on vacation. *Statistically significant differences using χ^2 test (P < .05). †All symptoms specific to the last 12 months.

*No Disinfectant Product Use

Chlorine & antimicrobial resistance

- 22 genera were isolated from chlorinated drinking-water with a range of susceptibilities to chlorine and antibiotics.
- Chlorine-resistant bacteria had higher MICs for tetracycline, sulfamethoxazole and amoxicillin.
- In the presence of free chlorine, antibiotic-sensitive bacteria survival was less than antibiotic-resistant bacteria.
- Weak correlations were found between chlorine-tolerance and minimum inhibitory concentrations against the antibiotics tetracycline, sulfamethoxazole and amoxicillin (*transmissible genes*) but not against ciprofloxacin (efflux pumps and porins) so most likely not on the *mac* operon.
- Antibiotic-resistant bacteria survived longer than antibiotic-sensitive organisms when exposed to free chlorine in a contact-time assay.

Disinfectant and the environment

Use of chlorine

- Non biodegradable and accumulates in the water effluent and water ways- kills natural flora
- Impact on soil and nitrogenous products-
- Impact on fish and wildlife
- Detrimental impact on the environment which is avoidable

If chlorine is to be applied as a surface disinfectant, it should be wiped on NOT sprayed

How should chlorine be used?-Take home message

- Clear indication of use in a policy- first clean, then disinfect!
- Apply chlorine to surface by wiping and not spraying
- Apply the correct concentration for the correct contact time
- Wipe off after contact time is over, to reduce corrosive activity especially on metals
- DO NOT SPRAY THE ENVIRONMENT WITH CHLORINE!
- DO NOT SPRAY HUMANS WITH CHLORINE!

The detection of SARS-CoV2 by RNA does not mean the virus is viable or infectious!