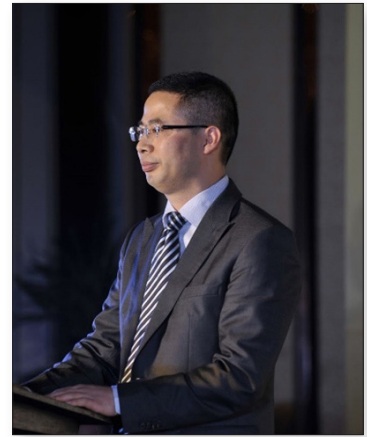


# The Important Role Played by Wuhan's PCO Companies in the Prevention and Control of COVID-19

A PCO's perspective on the control of the virus from its origin

**Fu Youcai**



The 2019 year end saw the unexpected outbreak of the new coronavirus in Wuhan. Wuhan Lifetai Technology Co., Ltd. ("Lifetai") and many other pest control operation (PCO) companies in Wuhan took part in the breath-taking battle against the virus over 100 unforgettable days and nights during the lockdown of the city. Leveraging this opportunity at the FAOPMA Pest Summit 2020, I am honored to represent China, especially the Wuhan PCO companies that engaged in the first-line battle against COVID-19, and to share our experience in preventing and controlling the epidemic. Here, I would like to express my special thanks to Dr Huang Xiaoyun of the Chinese Pest Control Association (CPCA) for her recommendation and encouragement.

## **PCO Companies Rose to the Challenge in the Darkest Moment**

At the turn of 2019 to 2020, the COVID-19 epidemic broke out in Wuhan, leading to the lockdown of the whole city on January 23, 2020.

At the beginning of the outbreak, the number of cases rose rapidly, causing panic throughout

the city. The epidemic led to an instant shortage of medical resources and even paralyzed the city's medical system. Its impact on families, communities, the public environment, and society was unprecedentedly huge.

At the time, we were told that COVID-19 may be transmitted through droplets, aerosols, and contact. In light of the serious situation, we had to take immediate action, such as quarantine and disinfection, to stop the spread of the virus.

Disinfection is not the main line of business for PCO companies, though we had experience of disinfecting during the SARS epidemic, the Wenchuan earthquake, and the floods of the Yangtze River 17 years ago. However, the scale and duration of our participation in disinfection work, as well as the number of participating PCO companies was pretty limited. As the outbreak of COVID-19 had led to serious shortages of medical resources, the infection prevention and control departments (IPCDs) of medical institutions were overwhelmed by the disinfection work. As the virus had contaminated all types of sites, the disinfection task was as huge as it was

complicated, making even the Centres for Disease Control (CDC) scratch its head when facing such a tremendously difficult job. China's National Patriotic Health Campaign, initiated in the 1950s, has been widely participated by the Chinese people over the years. China's PCO companies, which are scattered throughout the country, have long become an important non-government supporting force for the Chinese government's health authorities and the CDC. Aside from IPCDs of hospitals, CDCs, and grass root health centers, PCO companies have assumed most of the disinfection work.

Many PCO companies did not have targeted disinfection technology and personnel, nor adequate knowledge and experience in responding to major public health incidents. Therefore, in face of the COVID-19 epidemic, Wuhan's PCO companies were confronted with

serious challenges:

- The safety risk was high and may easily cause panic among the disinfectors.
- Running short of people; the outbreak of the epidemic coincided with the Chinese New Year break, when most employees of the PCO companies had returned home.
- Disinfectants and protective supplies ran short.
- Restrictions for operation; after Wuhan's lockdown, people were prohibited from entering or leaving the city, making disinfection operations an even greater challenge.

Totally unprepared, PCO companies were faced with a soul-torturing question; should it rise to the challenge or stand by watching? In the face of the lockdown and the risk of being infected, Lifetai and its peers in Wuhan did not shy away,

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but rather chose to join the fight against the virus. From that moment on, Wuhan's PCO companies had made up their mind to share weal and woe with the city. We could not predict when the epidemic would end, but most PCO companies did not hesitate to go through an unprecedentedly hard, peril-packed, yet unforgettable journey to disinfect the city.

**PCO Companies Played a Key Role at a Critical Moment**

*In the face of the COVID-19 epidemic, PCO companies made an urgent effort to prepare medical supplies and dispatch them in batches for disinfection and epidemic prevention. Wuhan is a mega city with a population of over 10 million. In the first half month after the lockdown, the demand for disinfection services skyrocketed, far exceeding the supply. Twelve PCO companies, including Lifetai, managed to overcome the fear of COVID-19 and the difficulties arising primarily out of unpreparedness, and delved into the provision of disinfection services. It didn't take long before the second batch of PCO companies engaged in the disinfection for the city.*

*The contributions of PCO companies could not be possible without the leadership of the technical departments of the Wuhan government and the*

*CDC, among others, as well the support from the CPCA. The Coronavirus Outbreak Prevention and Control Commands at the municipal, provincial, and national level, as well as CDCs at different levels provided technical guidance plans at different stages of the epidemic for different site.*

*To ensure the movement and safety of the disinfectors during the lockdown, the government provided special permits, as well as food and accommodation, for PCO disinfectors and vehicles.*

*The CPCA also offered a helping hand to Wuhan's PCO companies in the control of the epidemic by providing timely technical guidance and information support. They put together experts to help Wuhan's PCO companies overcome challenges concerning disinfection technologies; trained disinfectors through the internet; convened a national conference online, for data exchange on disinfection technologies and solutions to fight the epidemic, as well as for information sharing; and recognized outstanding disinfection institutions and individuals. The Wuhan Pest Control Association provided information on professional disinfection institutions to the government and the general public, helped PCO companies optimize the disinfection plans, and also organized leading*



Disinfecting hospitals.

experts to visit PCO companies.

*PCO companies took targeted disinfection measures for different types of sites and pollutants in accordance with the infectious disease control principles and the disinfection technology guidelines formulated by the technical department of the government.* Wuhan's PCO companies formulated disinfection plans in line with the infectious disease control principles. We adopted three disinfection measures: controlling the sources of infection, cutting off transmission, and protecting the susceptible; stuck to the principles of "early detection, early reporting, early isolation, and early treatment"; carried out targeted and tiered prevention and control measures at different stages of the epidemic; and put our focus on protecting the key places and the susceptible. At different stages of the epidemic, we took targeted measures to disinfect sewage, dirt, sites, and objects that may have been contaminated. We didn't neglect any dead ends or gaps, nor did we disinfect excessively.

We disinfected various types of sites against different pollutants, including: (1) The source of the outbreak. (2) All medical institutions admitting COVID-19 patients, 16 shelter hospitals, hundreds of isolation sites, and other related venues. (3)



Disinfecting sewage systems.



Disinfecting air conditioning ducts.

Septic tanks, domestic sewer pipes, and sludge that had been contaminated by the virus. (4) Medical waste, transfer vehicles and transfer sites. (5) Offices and residences of personnel engaging in the anti-epidemic work. (6) High-risk places such as elderly care institutions and prisons. (7) Logistics and transportation hubs, supermarkets, pharmacies, banks, vehicles and other places which had some limited access. The disinfected area, the number of sites disinfected, the duration, complexity, and risk were unprecedented for all of us.

After the lockdown was lifted and work and production were restored, the government organized the PCO companies to systematically disinfect the venues admitting COVID-19 patients and isolation sites, to restore a safe and clean environment for the Wuhan people. The city carried out a series of preventive disinfection activities at more than 20 types of sites such as schools, kindergartens, supermarkets, and movie theaters, before allowing the resumption of work. Centralized ventilation systems in public places were also thoroughly disinfected.

PCO companies overcome many difficulties concerning disinfection technologies thanks to the support of experts in various disciplines.



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Take Lifetai for example. The following technical problems concerning disinfection have been solved by consulting experts from the CPCA. (1) Disinfection of sewer sludge; how to effectively disinfect contaminated sludge without breaking the sewer pipes. (2) How to disinfect medical devices, such as negative pressure devices and ventilators with lumen. (3) How to disinfect massive numbers of medical and daily supplies for COVID-19 patients. (4) How to disinfect the dome of shelter hospitals, which are more than ten meters high. (5) How to disinfect fecal sewage in temporary hospitals and isolation sites for COVID-19 patients. (6) How to disinfect oxygen cylinders in shelter hospitals and ad-hoc remodeled hospitals. (7) How to disinfect facilities for storing frozen foods.

Leveraging our experience fighting the coronavirus in Wuhan, Wuhan's PCO companies dispatched representatives to provide

professional disinfection services for other cities with sporadic cases and cluster outbreaks.

### PCO Companies Achieved Remarkable Results during the Hundred-Day Lockdown

*The PCO companies' disinfection work was recognized by government authorities and widely acclaimed by the society.* By virtue of their quick response capabilities and well-trained professionals, PCO companies have become an important new force to prevent and stop the spread of the epidemic, and a powerful leverage for relevant government authorities, because they are very cooperative and responsive to problems concerning the epidemic.

PCO companies' achievements in disinfection have been highly acclaimed by all walks of life. Wuhan citizens say that they feel much more assured when seeing all the places disinfected

and they feel like their life has returned to normal.

*Disinfection contributed greatly to the control of the epidemic in Wuhan.* Three months after Wuhan's lockdown, the epidemic was basically under control. From the onset to March 16, 2020, the total number of confirmed patients in Wuhan was 50,004, among which more than 40,000 recovered and were discharged from hospital. By late March, Wuhan had not seen any new local cases for two weeks. Therefore, on April 8, 2020, the Wuhan Municipal Government announced the cancellation of lockdown, and the resumption of work and production in turn. Over the past months, there have been no local cases in Wuhan, which is largely attributable to the disinfection measures as an important means for the prevention and control of COVID-19 in Wuhan. The PCO companies providing disinfection services and all the disinfectors faced the risks and made a continuous effort to fight the virus, thereby winning the recognition of the society.

*During the disinfection process against the epidemic, Wuhan's PCO companies attached great importance to the personal protection of their employees, and didn't make any obvious mistakes.* As the new coronavirus is highly infectious, disinfectors must overcome tremendous fears to be able to work. It can be said that they were risking their lives to carry out each disinfection operation. For PCO companies and disinfectors, safety and protection were extremely important, and meant a great deal in terms of avoiding corporate risks, stabilizing the team, and enhancing confidence.

Take Lifetai as an example. During the epidemic, none of the over 500 disinfectors were infected. The reason behind this success is that Lifetai attached great importance to personal protection training by organizing its employees to watch videos regarding how to put on and take off the personal protective equipment (PPE) every day, and to put the techniques into practice. We were stringent with the quality of PPE we purchased, and asked our employees to wear or replace PPE according to the protection level. Before each disinfection operation, we would carry out strict inspections over the PPE. We made a continuous effort to strictly disinfect the offices, vehicles, and residences of the disinfectors so as to prevent them from participating in disinfection

operations without proper personal protection. The government and technical authorities also advocated and strictly inspected the protective measures of disinfectors. Public health physicians working at national, provincial, and municipal-level CDCs also offered professional protection guidance to the disinfectors. Physicians in medical institutions carried out personal protection inspections and technical guidance before disinfectors entered the contaminated areas or even during the disinfection operations. Lifetai's backbone employees, who had an educational background in public health and experience in the fight against SARS, played an exemplary role in the fight against COVID-19.

The nature of the work of the disinfectors determines that they must have a strong awareness of preventing diseases to protect themselves. Their working and living environments are always disinfected, which is why they are less susceptible to infection.

*As epidemic prevention and control becomes the new normal, it is important to take strict measures to prevent another outbreak in the autumn and winter months.* Wuhan and other Chinese cities have entered a stage of normalized epidemic prevention and control, and Wuhan's PCO companies have been prepared for recurrence of the epidemic in the autumn and winter of 2020.

Wuhan hasn't seen any local cases in the past few months, and has allowed the resumption of work, production, and school. But it is still advisable to stay vigilant against the virus and incorporate measures for epidemic prevention and control into our daily life. It is still necessary to keep good hygiene habits, such as wearing masks, washing hands frequently, partying less, and maintaining social distance, and be mentally ready for the possible recurrence of the epidemic. As autumn and winter approach, when respiratory infectious diseases frequently occur, we must take strict steps to guard against the possibility of sporadic cases and cluster outbreaks in individual areas.

It is necessary to prevent the spread of the coronavirus from outside the city and make an effort to promote the disinfection and epidemic prevention at office buildings, shopping malls and restaurants. In line with the region-specific,



Disinfecting schools.

multi-level targeted approach to epidemic prevention and control, Wuhan is identified as a low-risk region whose main task at the time being is to prevent the spread of the coronavirus from outside the city. PCO companies must pay attention to the disinfection of the following sites, and take targeted measures to foster ventilation and sanitary habits, and strengthen epidemic prevention by promoting environmental health: (1) Venues with concentrations of people coming from the hardest-hit regions and high-risk areas, such as isolation sites. (2) Fever clinics and COVID-19 detection points. (3) Urban and rural communities, government agencies, enterprises and institutions, schools, kindergartens, elderly care institutions, welfare homes, etc. Regarding these specific sites, it is necessary to disinfect particular areas, such as the centralized ventilation systems, septic tanks, sewer pipes, and food storage devices of cold storage and refrigerators, in accordance with laws and regulations.

Wuhan's PCO companies have been fully prepared for recurrence of the epidemic that may happen at any time while doing the normalized

prevention and control through disinfection.

### Thoughts and Suggestions after the Control of the New Coronavirus

*Can disinfection be an extensional business of PCO companies?* Most PCO companies mainly engage in the provision of professional pest control services. The extremely fast spread of COVID-19 posed a great challenge to effectively mobilize disinfection resources at a short notice. But it was this special predicament that prompted PCO companies to assume the disinfection task. It was a desperate move. Luckily, PCO companies had a natural advantage in this regard, as reflected in their ability to quickly mobilize local resources. More than one hundred companies participated in the disinfection of various infective sites. They could effectively provide targeted services in compliance with regulations. Thanks to their regular connection with the disease control groups, during the lockdown period, Wuhan's PCO companies cooperated with government authorities in an orderly manner to quickly control the epidemic, and effectively made up for the shortage of disinfectors in hospitals, grassroots

health centres, and other relevant organizations.

The uncertainty of the external environment makes it nearly impossible to predict when the infectious disease will strike again. Therefore, aside from continuing with vector control services, PCO companies may explore disinfection as an opportunity and an extension of their main line of business, because our expertise enables us to implement the disinfection work rapidly. Our work during the fight against the new coronavirus has won the recognition of the society, which greatly improved our social status and company value. Therefore, we will continue to pay more attention to the disinfection business. It is suggested that PCO companies with technical and talent reserves should explore disinfection services as an extension of their business.

*Is there a lasting demand for disinfection services by PCO companies? As the new coronavirus has not been eliminated worldwide, there is still demand for disinfection services in Wuhan and beyond. If the epidemic recurs, the demand will further increase. The catastrophic consequences of the epidemic have raised people's awareness of the importance of disinfection. As a result, medical institutions, food companies, supermarkets, schools, kindergartens, airports, and train stations may require PCO companies to provide preventive services to disinfect the air and hard surfaces. This need for disinfection will abate as the epidemic goes away and the normal state of life is restored. In other words, in Wuhan and even throughout China, the demand for disinfection services arising from the coronavirus is pretty limited in terms of both intensity and duration. New disinfection needs will only arise when other natural disasters, such as geological disasters and floods, occur to the prevent epidemics and other subsequent disasters. Therefore, the opportunities and demand intensity of disinfection services for PCO companies are sporadic, unstable, and uncertain, quite unlike vector control services whose demand is stable or fluctuates with the season.*

*What do PCO companies need to prepare before engaging in the disinfection work? Today, as COVID-19 is not under control globally, I suggest that when undertaking disinfection work, PCO companies establish close contact with the epidemic control authorities, collect in time the*

information on the changes in the epidemic, and pay attention to the formulation of disinfection emergency plans and the reserves of disinfectants and protective equipment. It is also necessary to standardize the management of medicines and equipment in epidemic warehouses, strengthen the training of disinfectors on disinfection operations, and conduct drills according to the emergency plan. In doing so, the disinfectors will be able to start their job immediately after the epidemic strikes.

*Suggestions.* Wuhan and other Chinese cities have entered a stage of normalized epidemic prevention and control. Wuhan's PCO companies have become fully prepared for a recurrence of the epidemic in the autumn and winter of 2020. Meanwhile, we wish to exchange experiences with other PCO companies in the Asia-Pacific region. We suggest that an information exchange platform be established so that we can obtain professional technical guidance from FAOPMA and share the practical experience of disinfection with our peers.

The sudden strike of the epidemic allowed us to experience this special period in history. By cooperating with the government, the CPCA, and our peers, we shouldered our social responsibility, and made a continuous and an effective effort to disinfect the city, thus gaining more recognition from the society. The process was packed with perils and difficulties, which tested our ability to coordinate in complex environments, our perseverance and teamwork in emergency, our ability to work in an orderly manner in various environments, and our resolve to overcome epidemics. Through the experience, the social value of PCO companies has been enhanced and our determination to assume the mission has been strengthened. I believe that through closer collaboration, the PCO industry in all countries will be able to survive these difficult times, convert challenges into opportunities, and usher in a better tomorrow! ■

*This article is a summary of the Mr Youcai's presentation at the FAOPMA-Pest Summit 2020 Virtual Conference.*

**Mr Fu Youcai** is the Chairman of the Board of Wuhan Lifetai Technology Inc.