

한·중·일 화재조사 운영체제 비교연구 A Study Comparing Korean, Chinese, and Japanese Fire Investigation Operating System

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요 약

화재조사를 실시할 때, 기본원칙과 조사책임, 보고기한, 각종 표준서식 등은 내부 훈령인 화재조사보고 규정을 통해 업무가 이루어지고 있다. 본 연구는 우리나라를 비롯한 일본과 중국의 화재조사보고규정을 통해 운영체제를 비교·검토하여 우리나라 규정에 없거나 보강이 이루어져야 할 대안을 마련하는데 목적이 있다. 결과적으로 추가조사가 필요할 경우 긴급화재와 일반화재에 대한 보고기간을 30일로 표준화 하고, 화재조사가 보고기한을 초과할 경우 지연보고서를 작성토록 하여 업무공백이 발생하지 않도록 하여야 하며, 화재관계자에게 자료를 요구할 때 자료보관증과 자료 반환증 서식안을 신설하여 운영하는 제도개선 사항 등이 필요한 것으로 나타났다.

ABSTRACT

When enforcing fire investigation, duty for basic principles, responsibility of investigation, report deadline, and all sorts of standard forms are based on fire investigation report regulation which is internal instructions. This study has a purpose to prepare alternatives that are absent in Korea or have to be strengthened by comparing and examining Japanese and Chinese fire investigation report regulations with Korean one. As a result, it appears that Korea needs to standardize the report deadline of urgency fire and general fire into 30 days when additional investigation is needed, have investigators draw delays reports up when they exceed the deadline not to make work vacuum, and found and organize forms of certificate of custody and return for all fire related materials when investigators require data from fire-related people, to improve whole systems.

Key words : Fire investigation report regulations, Report deadline, Delay report, Certificates for custody and return

1. Introduction

Fire investigation, a legal action that fire-fundamental law enacted, a peculiar duty that fire department should perform justly when fire occurs, should investigate not only cause of fire but also process of flame spread, life damages and property damages. Recently, due to the increasing nation's awareness and the development of science that enables investigators to find out the point of origin academically and practically, social interests about fire investigation are getting larger.

In the past few decades, the consciousness on fire investigation was relatively low, and the manpower and special equipments were too poor to organize whole system for theories and practical affairs. Nowadays, however, it is admitted as a real learning process and the method and procedure of fire investigation is getting its own features.

Based on fire-fundamental law, fire investigation in Korea is performed through fire report regulations on National Emergency Management Agency (NEMA)'s instructions including the purpose, system and execution progress of fire investigation. Many other countries have their own rules that are similar to Korean. Administrative

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regulations are usually applied to the internal administration only and have little thing to do with the nation's rights and duty, so special formality is not needed when enacting. Also, they can go into effect not by promulgating to the public but by notifying or publishing them into official gazettes. Fire investigation report regulations, however, have many legislative characters in restricting and imposing nation's rights and duty, and have articles about mandatory cooperations between related agencies while administrative regulations have a little legislative characters. Especially, when it comes to the matter which is out of internal special authority relation, arbitrary execution is restricted and strict base is required as it is come under the general authority relation that forces nations to follow based on the sovereign power of the country or local autonomous entity.

Therefore in this study, researchers have purpose to grope more effective managing systems and present proper operative ways about the current regulations which have many things to do with nation's life but enacted as internal instructions by comparing Korean with Chinese and Japanese.

2. Fire Investigation Report Regulations in Korea, Japan and China

2.1 Fire Investigation Report Regulations in Korea

Korea's regulations were established in the name of NEMA instructions (No.14) in 2004, and have been conducted as an practical guide of fire investigation through 3 times of revision to keep up with changes of society.

The report regulations are composed of entire 53 articles and Table 1 is showing the main details.

According to the regulations, operative main body of responsibility is the chief of fire headquarter or the marshal in fire stations and regulations make them to investigate the occurring fire in their jurisdiction. At the

Table 1. Contents about Fire Investigation Report Regulations in Korea¹⁾

<ul style="list-style-type: none"> · Chapter 1. General rules · Chapter 2. Investigation systems · Chapter 3. Investigation basic particulars · Chapter 4. Investigation execution · Chapter 5. Drawing up the fire investigation documents · Supplementary provision

same time, considering difficulty of work, they make the agencies to build exclusive fire investigation departments in every fire station, headquarter and let the principal of fire-fighting school organize departments for upbringing specialists and investigating the case of fire. Also, the instructions allow the chiefs and marshals to establish and organize investigation building when it comes to big fire, important fire, and special fire when needed. In case of America, investigators get larger authorities. For example, chiefs of fire headquarter in big cities like Chicago or New York have authorities to investigate all fire cases and authorities to secure and procedure suspects about arson.²⁾

As for the scene search process, the regulations grant authorities from moving out, questioning the related people, collecting information and materials to calculation systems for accurate amount of damages, procedures of situation report forms to propose execution process standards and devise the efficiency of investigation.

In the more concrete areas, the regulations restrict the nations' life inevitably to secure the minimum district for fire investigation when necessity is recognized. Scene investigation for fire scene have to be executed in the daytime and based on scientific methods and reasonable fact through physical evidences. The cause for fire is sorted by a national fire classification system which the chief of NEMA has fixed with the examination of the heat of ignition, ignition cause and the first ignited material synthetically. Fire departments can order the related person to present some materials or report in written statement according to the article 30 in fire-fighting fundamental law. Also, investigators can secure related evidences about heat of ignition and commence the investigation. However, the fire department has to present a certificate of custody to let the related person know who owns the materials unless he or she abandons the ownership. The damage investigation is divided into life damages and property damages and the big fire is prescribed when over 5 death tolls, over 10 casualties and over 5 billions of property damages to classify with general fire.

Also, for public welfare, the victim can recalculate the damages and file damage report to reduce some errors or corruptions and to actualize and materialize the investigation, when he or she has objection to the result. When it comes to the fire which is so slight that fire fighter did not move out, the regulations say that the victim can also present investigation request to the fire station if the scene is reserved to pursue convenience of nations. Figure 1 is showing Korean fire investigation

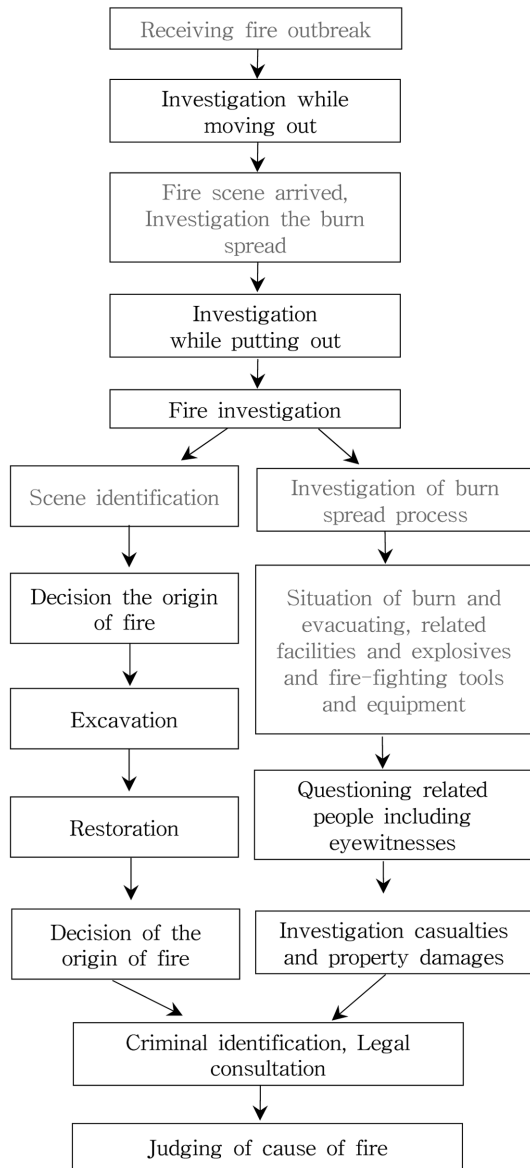


Figure 1. Fire investigation procedure.

procedure.

When the fire investigation finishes, investigators write one of the 19 kinds of reports including scene report, arson report, and fire occurrence report. When the fire investigation finishes, on the other hand, there is a deadline of 7 days for urgency status report and 5 days for general fire. If the investigator exceeded the limited term for additional investigation inevitably, he can extend the term after he make a briefing the reason beforehand.

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Table 2. Contents about Fire Investigation Report Regulations in Japan

- Chapter 1. General rules
- Chapter 2. The main body of investigation and systems
- Chapter 3. Implementing investigations
- Chapter 4. Investigating cause of fire
- Chapter 5. Investigation for damages
- Chapter 6. Preparation of documents
- Chapter 7. Report, etc
- Chapter 8. Miscellaneous rules
- Supplementary provision

2.2 Fire Investigation Report Regulations in Japan³⁾

Kyoto city's fire investigation regulations have been conducted since 1995 including cause of fire, investigation of damages, procedures, ways of operations and fire statistics and consist of 53 articles which is same with Korean's. Table 2 is showing the main details.

The nucleus of fire investigation is chief of a fire station who has competence over the area which fire occurred, and sometimes the fire marshal in case of special and big fire. In this case, he advises or supervises a chief of a fire station, which is similar to Korean.

In scene search, an investigator should not hold a biased view and use inductive inference with scientific logic and reasonable judgement about fire related objects or phenomenon. Inductive inference is a method to lead each general rule that cannot help causing fire above the integrate facts that occurs the fire. When collecting investigation materials, a victim presents the data at his opinion, and for people age under 18, protectors should be in attendance to make sure of the answers. When receiving needed materials from a related person, agreement certificates are given to an investigator for the record beforehand and a certificate of custody is provided to the related person. Also, strict concerns about keeping the evidences are paid by attaching recognizable tags on every material. The materials have to be returned after they are used enough, and the investigators should take a related person's receipt to follow taking over procedures in regulations. There is no mention about acquisition of physical evidences in fire scene in Korea fire report regulations while America investigators stick to the written form when taking over physical evidences.⁴⁾

There are 17 kinds of prescribed forms for investigation documents including fire investigation report and fire marshals or fire chief should make a report within 60 days after the scene investigation finishes.

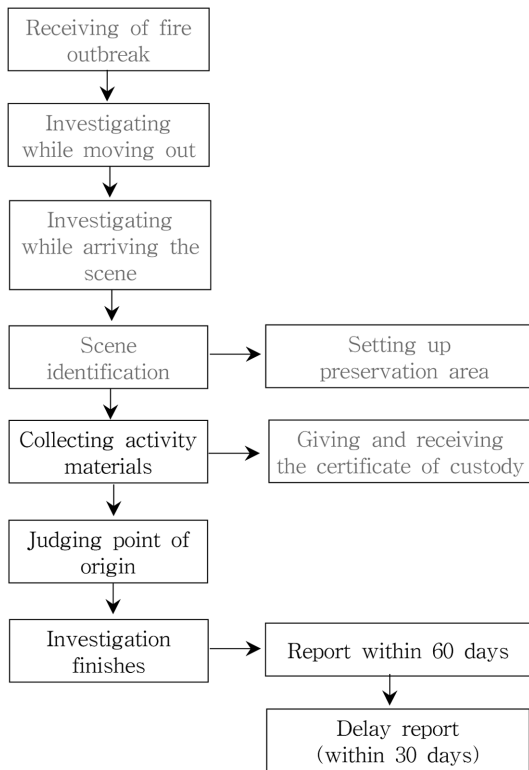


Figure 2. Japanese fire investigation procedures.

However, flexible operation is conducted including extending or changing the deadline according to the scale or kinds of fire.

As for Kyoto’s fire investigation regulations, there are extra fire investigation regulations for harmonious performance as a subordinate rules. Main contents are that they check their own equipments up once or more a month. If the report is not done within 60 days, investigators write a delay report which notifies the delay of the complete report within 3 days after the deadline, and the report includes reasons of delay, expected day of completion, and current progresses to prevent further delay or omission. Then, extra 30 days are given but no more is agreed. Figure 2 is showing Kyoto City’s main contents and investigation procedures based on its fire investigation regulations with extra fire investigation regulations.

2.3 Chinese Fire Accident Investigation Regulations⁵⁾

Chinese fire accident investigation regulations have been conducted since 1999 by Public Security Ministry Ordinance (No. 37).

Table 3. Chinese Fire Accident Investigation Regulations

<ul style="list-style-type: none"> · Chapter 1. General rules · Chapter 2. Jurisdiction of fire investigation · Chapter 3. Qualification of fire investigator · Chapter 4. Verification of cause of fire · Chapter 5. Decision of fire damages · Chapter 6. Verification of responsibility · Chapter 7. Reward and punishment · Chapter 8. Supplementary provision
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Fire investigation in China is performed under the responsibility of Public Security Ministry Ordinance of Fire. Local Public Security Fire Department is in charge of general fire and Provincial Public Security Fire Department which is higher order than the local takes the charge for important and big fire. Scene search is done by people who have qualifications according to each affair experience and the career are divided into junior, medium, and senior classes. General investigation principles are similar to Korea’s which is based on facts, actual investigation and science and joint identification team are sometimes exercised with specialists in electricity, gas, and chemistry when needed. Table 3 is showing main contents of Chinese fire accident investigation regulations.

Investigators who have direct interests on the case or with the related people cannot present deliberation or investigation to make sure the principle of justice.

Also, over 2 investigators should collect evidences together and to maintain the value as evidences, they seal the evidences with Public Security Fire Department’s signet after receiving signature from the related person. Fire cause acknowledgment certificate is drawn up based on evidences and circumstantial evidences after the scene search finishes. This document should be sent within 7 days from the day it is written to open the cause of fire to the fire-related person so administrative measures can be made to those who have responsibility for the fire accident. If the related person has an objection to the cause of fire, he or she can request reexamination to the Local or Provincial Public Security Fire Department within 15 days from the day he or she receives the Fire cause acknowledgment certificate. If the agencies accept the demand of reexamination, they commence the investigation, decide whether they maintain their statement or not, and inform the opinion lastly to the people. Through the regulation, administrative measures are imposed to prevent unfortunate situation resulted from lukewarm work in case of a mistake

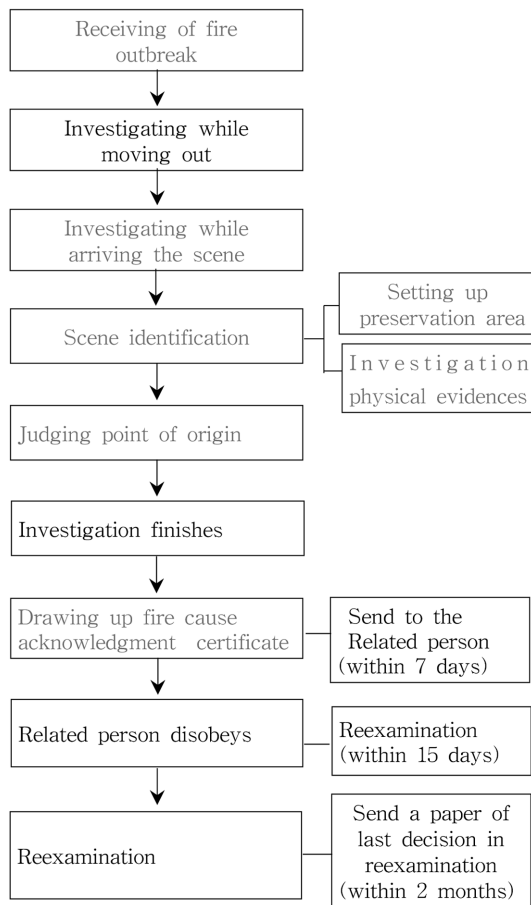


Figure 3. Chinese fire investigative operation systems.

which results in critical effect or an error by notifying a responsible person.

Also, blackmailing assets, misuse of authorities, carelessness about work, corruption to satisfy a selfish desire and so on are to be punished to keep transparency of work.

Figure 3 is showing main contents and investigation procedures of Chinese fire accident investigation regulations.

3. Proposal and Discussion about Operation System

3.1 Qualification and Responsibility for Fire Investigation

In Korea, China, and Japan, a chief of fire department is regulated as a person in charge of jurisdictional fire department and supervises the whole investigation

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procedures.

A competent chief of fire station has responsibility as a main body of investigation firstly, and for special or big fire, higher ranks including headquarters have authorities for investigating whole details like cause of fire, burning spread process of fire and specifics of damages. These series of investigations can get rid of unstable social factors externally, and lead to successful prevention policies internally. Current Korean systems, however, investigators usually investigate exclusively in each agency. For example, after fire is put out, the police takes part in, premised on criminal investigation, and companies specialized in insurances, gas, and explosives and combustibles participate directly and indirectly according to the kinds of heat of ignition or combustibles. Though these multiple-agency-system has its strong point in each agency's purpose, however there's a critical weakness that they don't share information at all. Fire is often connected with criminal action so investigation activity and recognized contents in scene cannot be separated or operated independently.⁶⁾

Continuous mutual cooperation about general status including point of origin, causes, fire outbreak process, and investigation progresses is needed. Fire scene bears a close resemblance to a battlefield. Most combustibles are destroyed or turned physically and chemically, accumulations are piled up disorderedly. So, exclusive and individual investigation has a limit in time and cost. And if the investigation is extended over a long period of time, correspondent social cost becomes larger.⁷⁾ In the United states, National Response Team is working on fire that is important socially or people feel interested in, and the states government make an order to establish Arson Team that fire marshal takes the head while Arson T/F Team which is composed of the police and insurance companies follows when big fire or arson occurs.⁸⁾

Fire investigation is conducted by those who have qualifications or who have taken proper education in Korea and China because it requires complex learning including electricity, chemistry, or architecture and extensive insights with knowledge and wisdom that can be applied to scene investigation. There is no qualification system in Japan, but seniors who have long term experiences about related affair or people who have gone through fire investigation education take the charge.

3.2 Documents Processing of Fire Investigation Paper

A fire investigation finishes when related documents are

all set. Document processing is based on materializing fair and responsible administration, and has its value on using it effectively.

Report deadline is 7 days for urgency fire and 5 days for general fire in Korea while the Japanese have 60 days for all cases. However, the Japanese have their unique system in writing delay report in case of exceeding 60 days to let people know the progress of work in real time. When it comes to an urgency fire in Korea, it includes big fire, special fire like arson, airplanes, and railways or important fire covering cultural assets, subways and public agencies that require longer time with larger human resources than general fire. To replenish the shortage of deadline, up to 30 more days can be recharged when needed in urgency fire, but for general fire, there is no specific term explaining extra period of time on the regulations. Though most nations think that fire scene search is one-shot operation, a long period of time is required to sort many kinds of reports and confirm analysis about plenty of evidences. Because over 15 days are demanded for componential analysis that is operated by fire appraisal organization or lab and over 7 days for fire protection control or violation of the Fire Services Act, there are some difficulties in keeping current regulations. Especially a case which has many things to do with criminal action like arson or has a number of casualties takes a lot of time in fire investigation inevitably.⁹⁾

So, a new rule that regulates the same extra 30 days for both urgency and general fire is required. A month of extra investigation seems suitable as a minimum time limit for reading and examining, juridical disposal about lawbreaking and close investigation on evidences. Korea also need a form to inform the delay in writing to materialize for records if investigators exceed the deadline in regulations that has not existed before. A fire investigation delay report has to cover a confirmation of person in charge, the date of fire, reasons of delay, location and so on. Table 4 is showing an example.

3.3 Administrative Care and Disposal for Related People

In Korea fire investigation report regulations, question-recorded documents should be written based on fire-related person's free statements and administrative service is provided that people can issue fire certification form by G4C whenever and wherever though they don't visit public agencies in person. Also, in case of an event that fire service did not move out or left damaged goods out, additional investigation activity can be placed to seek nations' convenience by submitting after-the-accident notification form.

Japan pursues conveniences of nations like Korea, too. Especially when it comes to fire related people age under 18, protectors should be in attendance during testimony to ensure the credibility of statement and strengthen nations' rights. In China, which guarantees related person's rights more, investigators send fire cause acknowledgment certificate within 7 days and accept reexamination request if related people have objections about fire causes. So, China is now accepted as a country which cares about nations' rights and has high pride in fire investigation despite its late cultural opening.

Fire investigation report regulation article 44, based on article 30 on fire fundamental law in Korea, allows investigators to order materials from related people. When this happens, the investigators have to give a certificate of custody. In reality, however, there is no written regulations about a certificate of custody, agreement paper or submitting warrant so work is not accomplished. The Japanese, on the other hand, put all the investigation activities on record by keeping submitting warrants, agreements paper in written statement before hand when receiving materials from related people, and even by handing over a certificate of custody after receiving the materials and giving certificate of return when restoring.

Table 4. Fire Investigation Delay Report (Proposal)

Fire investigation delay report	
Fire chief	Section chief Person in charge
Number of fire : Position : Rank : Name : (Signature)	
① Location/date of fire	Year Month Date Hour Minute ○○City ○○District ○Dong Street number Building name
② Progress status	
③ Reason of delay	
④ Expected day of completion	Year Month Date
⑤ References	

Physical evidences that are taken from the scene by investigators are the most critical materials and the importance and priority of keeping them well are getting larger, recently. Although there were considerable arguments over evidences on fire in the past, insufficient investigation equipments, unsystematic study, and nations' unconsciousness weakened the chance of development. Revised laws about responsibility of accidental fire, however, which clarifies responsibility of recompense to people who caused fire regardless of fire accident. And by doing this, revised laws have great influences to tense deeply involved people including fire department, police, individuals, lawyers and insurance companies enough.

So, administrative services are required to ensure nations' rights and assure transparency with objectivity of administrative procedure from collecting evidences to returning.

America demands perfect documentation of evidences when taken to find out cause of fire by recording the spot which the evidences are found and by recording contamination with damage of evidences.¹⁰⁾

Investigators sequester evidences when necessity is recognized. If sequestration procedure is performed illegally, investigators are not allowed to propose the materials as evidences to the court. The adoption of evidences are decided by the court according to the U.S constitutional law. So, all investigators keep in mind that the legitimacy about collecting evidences are decided by the court.¹¹⁾

To ensure credibility, a investigator should subscribe his name in the certificate of custody with attendance of fire-related person. Investigations can get rid of suspicions about damages on materials the evidences by taking pictures of the very first condition or video taping to clarify supervisory conditions of evidences and documents when writing certificates of custody. Evidences and documents that are given by related person must be used for public purposes, and the ownership and private information should be protected. A certificate of custody that has to be filled in fire investigation report regulations must contain date of fire, location of submitting, status with quantity and type of materials, and related person's signature. It also needs contents that the investigator must return after using the evidences if the person requires restoration and if not, it will be considered that he or she abandons the ownership. Table 5 is showing the example.

In a way, documents should be given to the owner in

Table 5. A Certificate of Custody in Fire Investigation (Proposal)

Fire investigation material certificate of custody	
① Date of fire	
② Date of submitting	
③ Location of submitting	
④ Type(name)/Quantity	/ Pieces
⑤ Status	• Good • Bad
Following evidences have to be returned when related person requires and if there is no sign of related person within 30 days from the day of submitting, it will be considered that he or she abandons the ownership.	
Year Month Date	
Related person :	(Signature)
Fire investigator in charge :	(Signature)

Table 6. A Certificate of Return in Fire Investigation (Proposal)

Fire investigation material certificate of return	
① Date of fire	
② Date of submitting	
③ Date of returning	
④ Type(name)/Quantity	/ Pieces
Returning the following documents.	
Year Month Date	
Related person :	(Signature)
Fire investigator in charge :	(Signature)

case that he requires restoration or there is no need to use the materials any longer. Researchers think that returning procedures have to be leaded in written paper with the owner's signature, too. Table 6 is showing an instance.

In Korea and Japan, administrative disposals are not mentioned in report regulations but in fire fundamental law. In Korea, investigators have authorities to order materials to related person and enter the scene. When the related people refuse to obey or submit false evidences, up to 2 million won will be imposed. China is operating more strict administrative disposals through fire accident investigation regulations, and it actualizes social safety by clarifying direct and indirect responsibilities with performance of fire prevention to those who caused fire including companies, groups, and of course, individuals.

4. Conclusion

This study intended to build more effective regulations by comparing Chinese and Japanese fire investigation report regulation with Korean in administrative disposals, investigation responsibility and managing documents. The followings are the summaries of research results.

Firstly, 30 days of additional investigation term is required when additional investigation is needed to investigate related documents enough in both general and urgency fire.

Secondly, when the investigation delays, an investigator should write delay report that notifies reasons of delay and expected day of completion not to make postponement of work and omissions.

Thirdly, written form like certificates of custody and return is demanded when investigators require documents to fire related people.

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