

【スライド 53】



【スライド 57】



【スライド 54】

寄生生物の多様性の危機と Pandemic
The crisis of biodiversity in pathogens and pandemic as consequence

- 近年の新興感染症 Emerging Diseases の感染爆発 Pandemic の背景には生物多様性の崩壊がある。
The collapse of biodiversity has caused the pandemic of emerging diseases in these days
- 野生生物と病原体の間には永きにわたる宿主-寄生生物共進化関係が存在する。
Wildlife and pathogen have constructed host-parasite relationships through a long co-evolution
- 生物多様性は病原体微生物のゆりかごでもある。(Daszak, 2006)
Biodiversity is a cradle for pathogenic micro-organisms
- 野生生物の生息地の破壊と生物移送が、共進化の歴史を崩壊させ、病原体微生物は新たな住処を求めて宿主転換 Host Switch を繰り返している。
Natural habitat destruction and transportation of wild-life have caused collapse of history of co-evolution between host and parasite

【スライド 58】

病原体検査
1. PCR / Cultivation: Imported wild reptiles from foreign countries

試料名	種名	検出率 (%)	検出率 (%)	検出率 (%)	検出率 (%)	検出率 (%)	検出率 (%)
試料 1	Geophis	100	100	100	100	100	100
試料 2	Geophis	100	100	100	100	100	100
試料 3	Geophis	100	100	100	100	100	100
試料 4	Geophis	100	100	100	100	100	100
試料 5	Geophis	100	100	100	100	100	100
試料 6	Geophis	100	100	100	100	100	100
試料 7	Geophis	100	100	100	100	100	100
試料 8	Geophis	100	100	100	100	100	100
試料 9	Geophis	100	100	100	100	100	100
試料 10	Geophis	100	100	100	100	100	100

2. PCR / Cultivation: Wild reptiles before exporting from foreign countries
Collection (Hiroshima University: 5/18/07, 8/15/07)

試料名	種名	検出率 (%)	検出率 (%)	検出率 (%)	検出率 (%)	検出率 (%)	検出率 (%)
試料 11	Geophis	100	100	100	100	100	100
試料 12	Geophis	100	100	100	100	100	100
試料 13	Geophis	100	100	100	100	100	100
試料 14	Geophis	100	100	100	100	100	100
試料 15	Geophis	100	100	100	100	100	100
試料 16	Geophis	100	100	100	100	100	100
試料 17	Geophis	100	100	100	100	100	100
試料 18	Geophis	100	100	100	100	100	100
試料 19	Geophis	100	100	100	100	100	100
試料 20	Geophis	100	100	100	100	100	100

【スライド 55】

キタガシラコウモリ
Greater house shrew bat

チンパンジー
Chimpanzee

新興感染症ウイルス
Emerging disease viruses

SARS HIV

共生関係
Symbiotic relationship

生物多様性の破壊は新興感染症の侵入拡大をもたらす!!
The collapse of biodiversity will cause pandemic of emerging diseases!!

【スライド 59】



【スライド 56】



【スライド 60】

東日本大震災における被災動物 対応の現状と今後の課題 ―放射性物質汚染への対応を考 える―

獣医師は、これまで大災害があるたびに、多くの方々の善意に支えられながら被災動物対応を実施してきました。そして、そのたびに、活動のノウハウを蓄積し、次の活動に役立ててきました。ところが、今回の東日本大震災は、これまでのノウハウが通用しないほどの、大規模な激甚災害であり、また、原発事故による放射性物質汚染という新しい敵にも遭遇しました。本シンポジウムでは、今回の動物救護活動の実情について報告するとともに、今回の経験を、今後の対応にどのように役立てるかについて考えていきたいと思います。

《主催》 社団法人日本獣医師会

《司会／座長》

「東日本大震災における被災動物対応の現状と今後の課題―放射性物質汚染への対応を考える―」

伊藤 伸彦氏（学校法人北里研究所 理事／北里大学 獣医学部学部長）

《演者》

「震災から今日まで…」小動物における動物救護活動について

河又 淳氏（福島県動物救護本部／千葉小動物クリニック 獣医師）

「東日本大震災における被災動物対応の現状と今後の課題―放射性物質汚染への対応を考える―」

佐藤 利弘氏（福島県 酪農業協同組合 生産部診療課 課長）

Workshop VI

ワークショップ VI

“The Current Situation Concerning the Handling of Animals Affected by the Great East Japan Earthquake - Considering Responses to Radioactive Material Contamination”

Every time a great disaster has struck, our vets have been called to action to handle the victim animals, backed by the warm support of many people. With every new disaster we have at least gained some valuable new expertise, skills and insights to guide our activities for the next time. However, the overwhelming scale of the damage wrought by the Great East Japan Earthquake was so enormous that we could barely make any dent in the recovery, even with all our collected and combined knowledge resources. Furthermore, we have been forced to confront a new enemy, the radiation pollution from the nuclear power plant accidents. So, at this workshop we would like to report on the current progress of the animal rescue operations and consider how we can make use of the new experience gained to better serve future efforts.

Organizer: Japan Veterinary Medical Association (JVMA)

MC / Chairperson:

“The Current Situation Concerning the Handling of Animals Affected by the Great East Japan Earthquake - Considering Responses to Radioactive Material Contamination”

Nobuhiko ITO, Director, Kitasato Institute, Dean, School of Veterinary Medicine, Kitasato University

Speakers:

“Animal Rescue Operations for Small Animals - since the earthquake up until today”

Jun KAWAMATA, Veterinarian, Great East Japan Earthquake Disaster Animal Rescue Task Force, Chiba Small Animal Clinic, Fukushima City

“The Current Situation Concerning the Handling of Animals Affected by the Great East Japan Earthquake - Considering Responses to Radioactive Material Contamination”

Toshihiro SATO, Veterinarian, Medical Care Division Head, Production Department, Fukushima Prefecture Dairy Farming Association

社団法人 日本獣医師会

Japan Veterinary Medical Association (JVMA)

獣医師は、家庭動物・家畜等の診療のほか、口蹄疫や鳥インフルエンザ等の伝染病から畜産を守るための家畜衛生、食品等の安全性や人と動物の共通感染症防疫に関わる公衆衛生、動物愛護、野生動物保護等の環境保全など様々な職域に就業し、社会を支える役割を担っています。

一方、獣医師は、これまで大災害があるたびに、多くの方々の善意に支えられながら被災動物対応を実施してきました。幅広い職域を持つ獣医師だからこそ、そして、様々な職域にある獣医師が結束したからこそ、激甚災害の中で、様々な社会貢献をなしえてきたと自負しています。

The role of a veterinarian extends much further than the examination of pets and farm animals. It involves various medical categories that help keep society safe relating to both animal health and public health. The former includes protecting livestock from infectious diseases (eg. foot-and-mouth disease and bird flu), while the latter includes food safety and preventing zoonotic infections.

Every time a major disaster has occurred, veterinarians have been able to help the affected animals with efforts backed by the goodwill of a great many people. I believe that we veterinarians can contribute to our society in many different ways during serious disasters because we can combine to form a collective wisdom acquired from our work in so many varied fields.

そのたびに、活動のノウハウを集積し、次の活動に役立ててきました。ところが、今回の東日本大震災は、これまでのノウハウが通用しないほどの、大規模な激甚災害であり、また、原発事故による放射性物質汚染という新しい敵にも遭遇しました。本シンポジウムでは、今回の動物救護活動の実情について報告するとともに、様々な立場にある獣医師が社会と連携して行ってきた今回の活動における経験を、今後の対応にどのように役立てるのかについて、国民の方々と一緒に考えていきたいと思っています。

In the past, we have consolidated the new knowhow gained from our activities and made use of it to help in subsequent disaster activities. However, in the case of the Great East Japan Earthquake the scale of disaster was so large that even the combined wealth of our expertise was barely able to help. We also had to confront a new enemy, the radioactive contamination caused by the accidents of nuclear energy plants. So, in this symposium, in addition to reporting about our actual animal rescue operations, I would like to share the experience gained by the various specialty veterinarians who worked together in collaboration with the public. I would also like to consider how we can make use of all the new experience gained to improve future measures with all the people in our country.

東日本大震災における被災動物対応の現状と今後の課題 —放射性物質汚染への対応を考える—



The Current Situation Concerning the Handling of Animals Affected by the Great East Japan Earthquake - Considering Responses to Radioactive Material Contamination

学校法人 北里研究所 理事／北里大学 獣医学部 学部長・伊藤 伸彦

Nobuhiko ITO, Director, Kitasato Institute, Dean, School of Veterinary Medicine, Kitasato University

東日本大震災がこれまでの震災と全く異なるのは、広い範囲で放射性物質による汚染が発生したことである。そのため、動物の救護活動には3つの特殊な問題が加わった。すなわち、救護活動を行う場所における活動者の放射線被ばく、被災動物の放射性物質による体表面と体内の汚染、原発から20km圏内が警戒区域になったために活動者の立ち入りが制限されたことである。

警戒区域内の飼育者たちが居なくなったために起こったことは、動物たちの放射線影響による死ではなくて、飢餓による苦痛と死であった。それでも、故意に逃がした動物や飼育檻や鎖から放れた動物の一部は生き延びた。犬や猫などについては、日本獣医師会HPで紹介された“動物の身体汚染への対応法について：緊急的暫定措置”を指針の一つとして保護活動が続いている。しかし、産業動物に関しては、原子力災害対策本部長から福島県に対して、警戒区域内の家畜の安楽死処分が指示され現在

に至っているが、域内には未だに1000頭以上の放れ牛や多くの野生化した豚などが生き延びている状況である。警戒区域内の動物には放射性物質の体内汚染があり、動物は制御しにくくなっているため、安全に捕獲することがますます難しくなっている。

国の方針に対し、牛の安楽死に同意した農家の方々には無駄に殺されているという思いもあり、さらに国内外から、警戒区域内の動物を助けるか人類に役立つ研究に使えないかという要望が寄せられていた。これを受けて、日本獣医師会会長が各方面に働きかけを行い、警戒区域内の放射能汚染牛を活用した研究が11月から開始されている。また、野生動物の体内放射能汚染の調査によって、福島県の面積の7割を占める森林中の放射能汚染を評価する研究も提案されており、原発事故の動物への影響の調査は始まったばかりである。

The reason why the Great East Japan Earthquake has produced a totally different situation from that of any previous major earthquake is that it has resulted in radioactive contamination across a wide area. This in turn has created three additional special problems for those engaged in animal rescue activities. Firstly, rescue workers have been exposed to radioactivity in some places where they were performing rescue activities; secondly, affected animals were exposed to both external and internal contamination by radioactive matter; and thirdly, rescue workers were not permitted access to the caution zone within a 20km radius of the damaged nuclear power plant.

The fate of many animals left inside the caution zone when their owners disappeared was not death caused by radiation but pain and death from starvation. But even in these circumstances, some of the animals whose owners deliberately released them from their cages or chains survived. In the case of dogs, cats, etc., sheltering activities have been continued with reference to the guideline document, “Methods of coping with radioactive contamination of animals’ bodies - urgent tentative measures”. This was introduced on the website of the Japan Veterinary Medical Association. However, with regard to farm animals, the chief of the Nuclear Emergency Response Headquarters

ordered Fukushima Prefecture to euthanize livestock within the caution zone. Nevertheless, the current situation is that more than 1,000 runaway cattle and many feral pigs still survive within the caution zone. Animals within the zone have internal radioactive contamination and have become difficult to control so it is becoming harder to capture them safely.

In the face of government policy, those farming households that agreed to euthanize their cattle now feel that their animals were destroyed for no purpose. Moreover, there have been requests both from within Japan and from overseas to rescue animals from the caution zone or to use them for research that can benefit people. In response, the Chairman of the Japan Veterinary Medical Association did change his request to the affected parties, such that research using cattle contaminated by radioactive materials in the caution zone began in November. A research project has also started in an effort to evaluate the radioactive contamination of the forests that occupy 70% of the land area in Fukushima Prefecture. This is being done by surveying the internal radioactive contamination of wild animals living in the forests. These examples demonstrate that research into the effects of the Fukushima Nuclear Power Plant accident on wildlife has just begun.

「震災から今日まで…」小動物における動物救護活動について

Animal Rescue Operations for Small Animals - since the earthquake up until today

福島県動物救護本部／千葉小動物クリニック 獣医師・河又 淳

Jun KAWAMATA, Veterinarian, Great East Japan Earthquake Disaster Animal Rescue Task Force,
Chiba Small Animal Clinic, Fukushima City



世界にも類を見ない東日本大震災により、福島県は宮城、岩手同様に甚大な被害を受けることとなり、それに加え原子力災害により、想像を絶する大惨事となってしまった。

福島県の報告によれば、警戒区域内にはおよそ1万頭にのぼる犬猫が生きており、結果的にはその6～7割が津波、飢餓、衰弱などにより死亡したとみられる。警戒区域内にはいまだに推定400～500頭前後の犬猫が取り残されており、行政による救護活動が精力的に行われているが、動物が人間に対して警戒を強めていることや放射線の影響で活動しにくいことなどもあり、動物の保護がスムーズに進んでいないのが現状である。

福島県動物救護本部は、震災後1カ月後に福島県が本部長となり福島県獣医師会、郡山市、いわき市の2中核市、福島県動物愛護ボランティア会の5団体で構成された。しかしながら当時は国、県、獣医師会は混乱を極めており、

我々県民も不安定な生活を強いられる状況下、これら団体が一枚岩になり動物救護にあたるのが困難であった。県動物救護本部は県内に2ヶ所のシェルターを設置し対応しており、緊急災害時動物救援本部からの義援金や全国各地からの支援の上に成り立っているが、未曾有の大災害ということもあり、その維持運営管理資金は膨大な金額が必要なため不足している。それに加え、慢性的なボランティア不足に悩まされており、資金と人の不足がシェルター閉鎖の見通しが立たぬ現状での大きな課題である。

今回の大災害を通じ、県や獣医師会レベルの被災地単独での動物救護活動には多くの問題と限界があり、官民一体となった大規模な組織力の投入が必要であることを痛感した。今後は大災害に備え、より広域での被災動物支援システムの構築と、そのマニュアル作成の必要性があるのではないだろうか。

The Great East Japan Earthquake was one of the most powerful earthquakes to have occurred anywhere in the world in modern times. The earthquake and the accompanying tsunami caused enormous damage in Fukushima Prefecture just as it did in the nearby prefectures of Miyagi and Iwate. But additionally, in Fukushima, the tsunami triggered a major nuclear disaster which has greatly compounded the impact of the original natural disaster.

According to a report from Fukushima Prefecture, prior to the disaster, approximately 10,000 dogs and cats were living within the so-called "caution zone". It is estimated that approximately 60 to 70% of these animals died either in the tsunami or else from subsequent starvation, weakness, etc. At present, around 400 to 500 dogs and cats are estimated to be living in the caution zone, and the authorities are actively attempting to rescue these animals. However, in the current situation, the work of protecting these animals is not going smoothly because they have become more cautious of people and because the presence of radioactivity makes it difficult to carry out rescue activities.

Fukushima Animal Rescue Headquarters was set up a month after the disaster struck by five organizations as members - namely Fukushima Prefectural Government, Fukushima Veterinary Medical Association, the governments of the two core cities of Koriyama and Iwaki, and the animal welfare volunteer association Fukushima-ken Dobutsu Aigo Volunteer Kai, with Fukushima Prefecture also playing an overall management role. But at that time, when the national and

prefectural governments and the veterinary association were operating in a state of extreme confusion, and in a situation in which we Fukushima residents were also forced to live precariously day to day, it was difficult for the organizations to carry out animal rescue activities monolithically.

The Animal Rescue Headquarters has dealt with the situation by installing shelters at two locations in Fukushima Prefecture and its operations are financed from public donations provided by the Emergency Animal Rescue Headquarters and by support from people all over Japan. But since the scale of the disaster was unprecedented, the amount of money required to keep the work going and manage the operation is huge, with the result that funds are in short supply. In addition, the Headquarters also suffers from a chronic shortage of volunteers. In the current situation, in which the closure of the shelters is nowhere in sight, insufficient funds and manpower are the major problems.

Through this massive disaster I have become acutely aware that if prefectural governments and veterinary associations carry out animal rescue activities by themselves, they are bound to come up against all kinds of problems and limitations. To work effectively, it is necessary to install a large-scale organized authority in which the government and the people are united.

For the future, in order to prepare in advance for major disasters, it will be essential to build up a more broadly based animal support system and also to produce a manual that can serve as a guide to operating such a system.

東日本大震災における被災動物対応の現状と今後の課題

—放射性物質汚染への対応を考える—

The Current Situation Concerning the Handling of Animals Affected by the Great East Japan Earthquake - Considering Responses to Radioactive Material Contamination



福島県 酪農業協同組合 生産部診療課 課長／獣医師・佐藤 利弘
Toshihiro SATO, Veterinarian, Medical Care Division Head,
Production Department, Fukushima Prefecture Dairy Farming Association

今回の震災で直接的な被害を受けた福島県内の牧場は僅かでしたが、ライフラインの寸断、乳業工場や飼料工場等の被災、燃料不足による物流の断絶等により、通常の生産活動ができず回復までには2週間余りを要し、原発事故による原乳出荷停止は更に追い打ちをかけました。そして浜地区に出された原発事故の避難指示は、状況が見えない中で同心円状に20km圏内の避難指示、30km圏内の屋内待避指示が1ヶ月余り続きます。この間牛の所有者達はその地に留まったり、避難先から通ったり、牛の避難を試みます。組合も行政との協議を経ながら避難先を確保し、一部家畜の移動を試みます。しかし4月22日から20km圏内は警戒区域の指定により、事実上家畜を放置せざるを得ない状態になりました。当初想定されていた殺処分や死体の処理も、作業環境や産業廃棄物としての処理見通しが立たず、大半の家畜が餓死し、

5月半ばには死屍累々の状況となったと聞きます。5月に始まった一時帰宅者やボランティアからもたらされたその映像はメディアを通じて世界中の知る所となります。その後も作業は遅々として進まず9月過ぎまでかかった様に聞きます。これらの事は家畜の所有者や畜産関係者に心の闇を残す結果となりました。

一方野生化した牛や豚の存在は、今後自家繁殖あるいは野生動物との繁殖によるエリア拡大等の新たな問題となると考えます。

次に、放射性物質汚染は生活環境としての地域的な汚染分布だけでなく、時間の経過と共に未知の放射性物質の濃縮（地形的、生物的）を実感させました。地元農業を持続させるための課題は多く、生産物モニタリングと生産サイクルの検証、検査体制、リスクコミュニケーション、除染技術の開発等多面的な取組が行われています。

In Fukushima Prefecture, only a few livestock farms sustained direct damage from the recent earthquake. However, due to the severing of lifelines, damage to dairy factories and other facilities, interruptions in distribution due to fuel shortages and other reasons, it took more than two weeks before production activities returned to normal. Moreover, the dairy industry's problems were further compounded when the shipment of raw milk was halted on account of the nuclear power accident.

While the radioactive contamination situation was invisible to the eye, a nuclear power accident evacuation order was issued for people in the Hama district within a 20km radius of the plant, while those living between 20 and 30km of the plant were ordered to remain indoors. These orders remained in force for over a month. During that time, cattle owners attempted to evacuate their animals while remaining on their farms or commuting to and from their evacuation sites. The Dairy Farming Association also tried to remove some livestock to secure locations in consultation with the administration. However, from April 22, when the area within the 20km radius was designated as a caution zone, conditions were such that it became virtually impossible to help the livestock and they had to be left unattended. In the beginning, slaughtering the animals and disposing of the carcasses was considered, but there was nowhere suitable either as a working environment or as a disposal site for the carcasses as industrial waste, so most

of the animals died of starvation. I heard that, by the middle of May, the situation meant that there were heaps of carcasses. Such images, taken by people returning to their homes temporarily, and by volunteers, were brought to the world's attention by the mass media. Even so, restoration work made little progress. I then heard that the situation continued beyond the end of September and it created a sense of doom and gloom in the minds of livestock owners and people involved in stockbreeding.

On the other hand, with other livestock such as cattle and pigs having been let loose and turning feral in the disaster area, new problems are expected to emerge in the future. By this I mean the broadening of the contaminated area due to uncontrolled breeding or interbreeding with wild animals, etc.

Secondly, we have witnessed not only the distribution of radioactive material contamination in the local living environment but also the topographic and biological concentration of radioactive materials as time goes on. Many issues remain to be tackled in order to maintain local farming, and we also need to take a multifaceted approach that includes product monitoring, production cycle verification, checking systems, risk communication, and decontamination technology development, etc.



Workshop VI

ワークショップ VI 記録集

東日本大震災における被災動物対応の現状と今後の課題 —放射性物質汚染への対応を考える—

The Current Situation Concerning the Handling of Animals Affected by the Great East Japan Earthquake - Considering Responses to Radioactive Material Contamination



学校法人 北里研究所 理事／北里大学 獣医学部 学部長・伊藤 伸彦

Nobuhiko ITO, Director, Kitasato Institute, Dean, School of Veterinary Medicine, Kitasato University

Good morning everybody. Thank you very much for taking the trouble to attend this workshop from such an early hour.

A little later, under the theme of “The Current Situation Concerning the Handling of Animals Affected by the Great East Japan Earthquake - Considering Responses to Radioactive Material Contamination,” two of our speakers will be talking about small animal and farm animal cases respectively. Even between us, it will be impossible to comprehensively cover such a broad-based theme so if any of you among the audience would like to add your opinion, suggestion, or comments based on your own experience, please do not hesitate to join in. We have allowed for approximately half an hour at the end and we'd like to use that time to develop active discussions.

Please allow me to begin by telling you a little bit about myself. I was born in Fukushima Prefecture but moved to Sendai when I was five years old. Soon after that I moved again to Tokyo. Until recently, I was not very conscious of where I had spent my earliest days. Indeed I had almost completely forgotten. But after the earthquake and having to make frequent visits to Fukushima, I realized again that my parents' roots were in that prefecture. My mother comes from Aizu and my father comes from Hara-no-Machi in Minamisoma. I remember that, as a young child, I was often taken to Hara-no-Machi to go swimming in the sea. Next year I will reach retirement age and I feel that Fate is once again drawing me there to grapple with the terrible problems. I had been expecting to live a quiet life of retirement but it seems I must actively continue

working on the problems there. At least, that is how I am reconfirming my situation.

Currently I am teaching at Kitasato University in Tokyo, where I serve as the Dean of the School of Medicine. My specialties include therapeutic radiology and radiodiagnostics, and for a long time I have also researched environmental radiology. As you know, Aomori Prefecture is the site of a nuclear fuel reprocessing plant. Construction of the plant began soon after I started working at Kitasato University and I began to measure environmental background radiation even before it became operational. Ever since, I have continued taking these environmental measurements. Recently, I was told that my work is not an academic subject and is of no value to the world. And while I would prefer that such work never need become useful I am now having to push myself to face this (radioactive contamination) problem in the closing years of my life.

Now, I would like to introduce today's lecturers. Our first speaker will be Mr. Jun Kawamata a veterinarian who works at the Chiba Small Animal Clinic in Fukushima City. In addition to being active in numerous other roles, he is currently serving as Chairman of the Fukushima Veterinary Medical Association's Great East Japan Earthquake Disaster Animal Rescue Task Force, so he is deeply engaged in dealing with this problem. I believe he will be talking to us from that perspective.

Our second speaker will be Mr. Toshihiro Sato, Head of the Medical Care Division in the Production Department of Fukushima Prefecture Dairy Farming Association. A graduate of Azabu University, he has worked as a

veterinarian at the Association for 23 years. For the first ten years his medical practice work centered on dairy cattle, and since 1999 he has been involved in making rounds and instructing farming families while working at the Association's Headquarters. Since the issue of handling animals affected by the earthquake disaster not only encompasses relationships between people and animals but also touches on a variety of problems such as food problems, etc., I expect Mr. Sato will also be talking about those topics.

This is a photograph of some newspapers. I took it in a newsagents inside the evacuation zone when I had permission to enter. I noticed how these undelivered newspapers were all piled up and took some photos of them. This is a newspaper dated March 12th, the day after the earthquake. There had been the tsunami, of course. These photos show the situation inside the evacuation zone. Even large boats were swept inland by the tsunami and in many places they had not yet been removed. The photo at the bottom shows that the tsunami had passed through the building interior.

This is the interior of a building close to the station. I took a shot of the inside from the outside through the glass. I think the room had remained in the same disordered state since the people who lived here evacuated on the day after the earthquake.

Since the damage caused by the tsunami was on such a large scale, we tend to forget about the earthquake itself. But as this photo shows, there were lots of old buildings that suffered either partial (first floor) collapses or total (first and second floor) collapses.

This is a newspaper dated March 13th. On the 12th, there had been the hydrogen explosion in Fukushima. If this had not occurred, the situation would have been different. I forget which is the No.1 reactor, but the reactors here are lined up in order from No.1 to No.4. It seems that the chemical environment inside the reactor buildings made it easy to produce hydrogen and that this resulted in the explosion. First there was an explosion at the No.1 reactor, on March 12th, and then the same thing happened on the 14th at

the No.3 reactor. The other reactors seem to have suffered meltdowns, with their fuel rods melting and radioactive materials being released into the peripheral environment.

This is a photograph of people measuring radioactivity. The Geiger counter shows quite a high reading of 300 microsieverts per hour. I don't think anybody is living around here but if somebody did stay here for a year, I calculate they would receive about 26 sieverts of radiation. So you can see that this is a place where people would risk a lot of radiation exposure. Actually, later on we found many places with higher radiation exposure levels than this. Particularly around the reactor buildings, there were places where the radiation levels were pretty high. I imagine cleaning up that mess must be very hard work.

Often we measure the concentration of radioactive substances with an instrument called a survey meter, but when we want to measure a sample precisely, we use a germanium semiconductor detector. Each type of radioactive nuclide produces its own characteristic type of gamma ray emission with a specific energy level. We can use this to simultaneously measure radiation both quantitatively and qualitatively. These are the figures we measured on April 10th. At that time point, the amount of radioactive contamination adhering to the grass and trees was greater than the amount in the soil. This is a line-up of spectra from grass, soil and milk samples, which were measured at the same time. I was asked to measure milk, pasture grass and fodder for cattle by residents of Date City, and we performed these measurements on April 10th. These spectra are from the samples we collected there. Radioactivity was not detected in the drinking water or milk.

Among the soil and pasture grass samples, the grass samples yielded higher radioactivity levels than the soil. The grass subsequently died and fell flat. However, when the new grass for the next year came up, the situation reversed and the soil now has higher levels of radioactivity. Once radioactive particles get into the soil they remain in place and will hardly wash away at all. Then eventually farm animals browse on the

contaminated pasture, and the radioactivity moves up the food chain, eventually reaching people.

I wrote that animals are always victims in these situations and this photograph of a dead animal sadly illustrates the point. Cats will enter the area so we then come to a situation in which wild animals and feral dogs have eaten the flesh of dead cattle and pigs.

There is a video of some ostriches and watching it saddens me but I'll just show a bit of it to you. Normally, this is a peaceful landscape with only the sound of birdsong. So the ostriches must be puzzled by the situation. I think they creatures were captured after the video was taken.

Some house pets were evacuated together with their owners or keepers, but a lot of people had their hands totally full with evacuating themselves and had to leave their animals behind. Those that were released were able to forage and many did survive, but others were left tied up and died of starvation or thirst. I'm sure the owners expected to be able to come back soon but were unable to. Many surviving animals still remain inside the evacuation zone.

I took this information partially from the Ministry of the Environment's website. The contents show the activities we carried out on May 11th. According to this, the animal rescue activities started soon after the earthquake struck, but it proved very difficult to capture the animals. Mr. Kawamata will be talking about this later on.

As of April 1st, we posted this statement on the Japan Veterinary Medical Association's website. Dr. Masahiro Natsuhori of the Japan Animal Referral Medical Center and I were also involved in its formulation, so I have some responsibility there too. Around March 15th, we started to talk about what to do. We had to decide an animal decontamination standard but at the time there was no such standard, not even for people. However, the National Institute of Radiological Sciences came to announce some decontamination guidelines which we decided to follow for companion animal

decontamination also. From my previous experience with radiation therapy I felt that, essentially, there is little difference between people and dogs or cats when it comes to the effects of radioactivity. So we posted this on the Japan Veterinary Medical Association's website. Basically, it states in a nuanced way that we should treat companion animals in the same way as people. Because it was a tentative statement, although it instructs vets to use a survey meter, it doesn't specify which type of survey meter should be used, or under what conditions it should be used. It just explains how to wash the entire surface of an animal's body, etc. At that time, we were considering only body surface contamination. Even for people, we had little recognition about radioactive particles entering the body and internal exposure. I will talk more about this point later.

Regarding farm animals used for food, on May 12th, Prime Minister Naoto Kan, as the Head of the Nuclear Emergency Response Headquarters, ordered Fukushima Prefecture to euthanize all living farm animals inside the evacuation zone after obtaining the agreement of the animals' respective owners.

The main targets for this order were dairy cows, beef cattle and pigs. Abandoned chickens had already died of starvation or thirst. And yesterday, I heard from Keiko Yamazaki of the Companion Animal Study Group "Go" that all the animals kept in schools in the evacuation zone were dead. Sadly, many animals left behind in the zone died totally neglected.

However, not all of the farm animals could be euthanized and the problem of escaped farm animals including cows, remains. These animals are gradually turning feral such that the usual human control methods are ineffective and the animals are now becoming dangerous. Another problem is that unneutered male calves have now grown into bulls and begun to impregnate cows. A lot of new calves have been born and the animals have now formed into herds. The bulls' horns have grown larger for protecting their herds and some of them are dangerous to approach. Now, compared to escaped dairy cows, escaped beef

cattle are now more numerous. Mr. Sato will be talking about beef cattle later on.

This shows the situation faced by some pigs. The pig pens were locked and all the pigs left inside died and their decomposing bodies congealed into a sticky mess. However, many were also released or escaped from farms and subsequently became feral, forming themselves into groups. I don't know whether the animals in this photo escaped or were released. There is a little piglet here, although it is difficult to see. I tried to get close in order to take a better shot of it, but the mother moved in front to hide it. Next moment a boar also came out and threatened us so we quickly retreated. It seems these pigs had broken into a grain storage warehouse and had fed on the rice there. That's how they survived.

I have some photographs of horses that were caught up in the tsunami and died. As you can imagine, they are too miserable to show so I won't burden you with them today. However, many others did survive and were basically treated in the same way as companion animals. The injured ones would receive medical treatment and be taken out of the evacuation zone. But even after all that, there was still another problem. They had been grazing on grass within the evacuation zone and had ingested radioactive particles. Radioactive cesium was detected in their feces and urine. So when attempts were made to move them to other places, they were not accepted. The result is that they remain and their keepers have to ensure they do not eat the local grass. This is Minamisoma Baji-Koen Equestrian Park, and the horses here seem to be lacking energy too.

Finally, I'd like to talk about wild animals. When I was taking radiation measurements of wild animals in the early period after the earthquake (around April and May), the Fukushima Wildlife Rehabilitation Center sent us many different items which I measured. As we also had to measure body surface contamination of wild animals we collected road kill and checked the levels of cesium 143 and 137, finding similar levels of both nuclides present. Please note that, although the concentration of cesium in the muscle tissue of

this raccoon dog was quite high, it was low in the case of other raccoon dogs. So I think these figures reflect the degree of contamination in the locations where the individual animals were living. The figures differ markedly from one individual animal to another. Please note that the figures here are presented using a modified scale that omits highly contaminated individuals like the raccoon dog I showed you just now. These figures show Japanese serows, badgers, martens, and masked palm civets. And this is a raccoon dog that had a low degree of contamination.

We discussed how much these animals reflect the contamination in the locations where they lived. But with the Japanese serows, because they range over a wide area, we felt that their readings do not necessarily reflect the contamination situation of a given location. What we focused on was the overall condition of the mountain areas. Contamination adheres firstly to the leaves and bark of trees, so forests tend to capture radioactive particles fairly easily. Once radioactivity adheres to organic materials it is not easily dislodged. These organic materials eventually fall to the ground and accumulate in the soil where they decay over time, eventually becoming covered by fresh material. But they are not very deeply buried so other plants growing in the soil easily absorb them. It is due to this circulation between plants and soil that radioactive contamination in mountain forests can continue for a very long time.

When rain falls, radioactive cesium does initially flow through the surface soil layers but after some time has passed the flow becomes less. For this reason it is said that, apart from the physical attenuation due to radioactive decay stemming from the half-life of radiocesium of about 30 years, the immobilization process will reduce the bioavailability of cesium after a year or two. I am not absolutely certain, but I suppose that about two-thirds of the Fukushima Prefecture area consists of mountain forests. Accordingly, a considerable part of the prefecture will be in a fairly contaminated situation. That radioactive materials have built up in the forests is quite well known, but detailed research has not yet been undertaken. That's the

current situation regarding the forest environment.

It is said that wild boar territories tend to be small. These animals live in a certain small area for a certain period. They do sometimes move to a new location but will return to their original area again. When feeding they dig down into the soil and eat the things they find. Checking their stomach contents tells us that they also eat leaf mold. So the readings we have obtained from wild boar correlate well with the level of radiation contamination in the locations in which they live.

This map shows the 20km and 30km zones surrounding the nuclear power plant as well as the area outside them. When nuisance animals in the Minamisoma, Soma and Nihonmatsu districts were exterminated we obtained samples of the local wildlife. This slide shows the contamination situation in these areas. We asked Fukushima Wildlife Rehabilitation Center to send us some samples, and we measured a variety of things including body surface contamination.

Air dose rates are measured at a height of 1m above the ground. We checked the relationship between air dose rates and degree of contamination in animal bodies found at specific locations. This shows how the level of radioactivity on the body surface overlaps with the concentration of radioactivity in the muscle tissue on which we later performed precision analysis. There seems to be an overall correlation, but some of the body surface measurements turned up negative figures. This means that it is problematic to evaluate contamination inside the body merely by measuring the body surface.

This slide shows the results of measuring gastrointestinal contents. As to whether ambient air dose rates and figures obtained from feces correlate or not, since what an animal eats is excreted as feces in a rather short time, one might assume that feces contamination levels would reflect air dose rates. But in fact we found no strong correlation. However, gastrointestinal and stomach contents consist of the food an animal has eaten quite recently, so we know that they must have quite a high correlation coefficient, although this matter has not yet been sufficiently

discussed.

Now, let us consider radioactive contamination in muscle tissue. For the muscle as a whole, we obtain fine positional information using precise instrumentation and then we perform dose-rate conversion. The muscle results show us the air dose rate in the area where the animal lived. Accordingly, we know that we can grasp the contamination situation in the relatively small zone where, for example, an individual boar is caught by measuring the levels of radioactivity in the boar's muscle and organ tissues. We are now applying for research funding so that this research can be carried out on a continuous basis. However, competition for funds is very intense because many researchers not previously been involved in radioactivity studies are now entering the field and taking advantage of the opportunity provided by the current nuclear situation.

We have obtained some data from the survey we began. For instance, it has been established that when livestock farmers provide contaminated livestock with clean feed, the previous contamination is excreted and the livestock have no subsequent problems. This is a study undertaken to see whether the data we gathered is of use in this context. This photograph was taken in the Kodaka district of Minamisoma, which is inside the evacuation zone. This is a farmhouse not currently occupied because the residents have been evacuated. Our plan was to house some contaminated cattle on this farm and provide them with clean feed. The situation was that dozens of cattle had been captured and were waiting to be euthanized. When we visited, we were told that the cattle would be euthanized over the course of several days beginning the next day. So we asked the handlers to let us use the cattle for our research instead which they agreed to. The cost of this research was covered by a budget for various research projects obtained by Dr. Yamane, President of the Japan Veterinary Medical Association. So we decided to begin this research with JVMA cooperation. And because this research has several data-gathering goals useful for livestock rearing, we are also joining with researchers from several universities.

At the end of October, the hygiene conditions at the farmhouse were poor, and people were only going there occasionally. The farmhouse owners who had originally lived there came to help only once every three days. We visited and worked there every few days but conditions can only be described as miserable. The cattle were sometimes eating PVC and their feces was just left to fester. Even when there was fresh feed it had just been rolled in and left on top of the feces, and the cattle were left to eat it with no control. Because the place was being managed in this haphazard way the cattle's nutrition status was quite poor and we would not be able to use them for research in that state. Unless the hygiene in the keeping areas and the cattle's nutrition status could be improved, we would not be able to collect usable data. We would only be making the cattle suffer for the sake of research. So having been kept like this, after about six weeks, we began to supply them with clean food that was imported and measured and we optimized the nutritional balance by mixing American and Australian feed. We started our research while improving the cattle's nutrition in this way. A total of ten veterinarians were involved in the work. From around Christmas time we switched the cattle to ordinary feed and, one month after that, at the end of January, we performed autopsies on some of them and measured the extent of radioactive contamination.

Our results indicated that radioactive contamination attenuated faster than we had expected. Over several months it had attenuated at a faster rate than the radioactive half lives of the nuclides would lead one to expect. We have been continuing this research by dividing the cattle into four groups including one group to which we administer Prussian blue as a decontamination aid.

As for cesium, we had expected to find it distributed almost evenly throughout the body in the same way as potassium, but when we performed the actual measurements we found that radioactivity concentrations differ significantly between different muscles. We also found that the distribution results are reproducible and that there are no differences between individual animals. In addition, we found that certain

organs take up not only cesium but also nuclides of other elements.

After studying everything in greater detail, we expect to be able to complete our data compilation and announce our results to the public in May. We will attempt to summarize the data so that it will be useful in regenerating the local livestock raising industry in the future.

That concludes my talk. Next I would like to call on Mr. Kawamata.



「震災から今日まで…」小動物における動物救護活動について

Animal Rescue Operations for Small Animals - since the earthquake up until today

福島県動物救護本部／千葉小動物クリニック 獣医師・河又 淳

Jun KAWAMATA, Veterinarian, Great East Japan Earthquake Disaster Animal Rescue Task Force,
Chiba Small Animal Clinic, Fukushima City



My name is Jun Kawamata and I am a veterinarian with a practice in Fukushima.

I used to know nothing at all about earthquakes and then suddenly the disaster struck us. Even so, I still don't think I can talk effectively on the subject of earthquakes but, to begin my talk, I can talk about what actually happened in chronological order.

As Dr. Ito said earlier, I heard that this earthquake, which measured Magnitude 8.8 and had an intensity of 7 on the Japanese "shindo" scale, was the largest to strike Japan in a very long time. In Fukushima City, the intensity was measured as a '6 Lower'. Nevertheless, the quake left my animal clinic and home in a total mess. There was literally no place to step, and I was shocked speechless. Fortunately, the clinic itself was not too badly damaged and we managed to keep our practice operating in one way or another, as it still does now.

This slide shows Minamisoma City on the Pacific Ocean side of Fukushima Prefecture where the tsunami swept away many private houses and other structures. I've heard that in Miyagi Prefecture and Iwate Prefecture, the tsunami damage was far worse, but the situation in parts of Fukushima was also very serious.

After the tsunami abated, the area it passed over had been reduced to piles of rubble with hardly any standing structures to block the view to the horizon. The roads were cut off, the railways didn't work, and almost the entire infrastructure was gone. The water supply was cut off for ten days in Fukushima, and since hospitals need water in order to function, every day we would travel 10 or 20km to obtain well water

from private homes in the mountains. That's how we were able to continue the clinic's practice. In daily life, because of shortages and distribution problems, the situation soon developed to the point where people everywhere were running out of water and food.

This is the No.1 reactor at the Fukushima Daiichi Nuclear Power Plant. On March 12, the day following the earthquake, there was an explosion at the No. 1 reactor. This was followed on March 14 by an explosion at the No.3 reactor and on March 15 by explosions at the No.2 and No.4 reactors. But surprisingly, people living in the local area were not officially informed of these explosions at the time. Locally, we just thought smoke was rising, but we had no detailed information.

This slide shows the flow of radioactivity from the plant. As Dr. Ito explained just now, this line is the border of Fukushima Prefecture. My home is about here. The Fukushima Daiichi and Daini Nuclear Power Plants are a little to the south of where I live. First of all, very high levels of radioactivity went up into the air and then began to move southward. From the Fukushima border, the radioactivity travelled far to the south, flowing into the northern Kanto region. This was the radioactivity flow situation in April.

For my own reference, I studied the distribution of nuclear power plants around the world. Japan is difficult to see on this slide, but it is just here. This time, explosions occurred at just one nuclear power plant, and the situation became so serious that it is being said that the entire world has been contaminated by the radioactivity from that accident. So I think there is a need reconsider the whole issue of nuclear power.

The next slide shows the distribution of electrical power generation plants in Japan. These here are all nuclear power plants. Those marked in red are thermal power plants, and those in blue are hydroelectric power plants. As you can see, these are the four reactor buildings at the Fukushima Daiichi Nuclear Power Plant where explosions occurred. This big one is the No.6 reactor. Each of the reactors at the Fukushima Daiichi Nuclear Power Plant also has a very high power output. Had explosions occurred at any of these reactors, I believe the situation could have become even more serious. You can also see thermal power plants located by the ocean. There are a lot of these on the Pacific side of the country in Tohoku and Kanto.

These figures show the number of people confirmed dead and disappeared due to the earthquake and tsunami. In Miyagi and Iwate, there were many dead or disappeared and many evacuees. In Fukushima, as of January 22nd, 2012, approximately 1,900 people had been officially confirmed as dead, although this number may differ from some other announcements. Still today, 30,000 people evacuated from their homes in Fukushima are living elsewhere inside the prefecture and 60,000 are living outside the prefecture. The prefecture's population is about 2 million, which means that about 3% of the population are currently living as evacuees outside the prefecture.

The Headquarters for the Relief of Animals In Emergencies began its activities on March 14th. The Japan Society for the Prevention of Cruelty to Animals (JSPCA), the Japan Animal Welfare Society (JAWS), the Japan Pet Care Association and the Japan Veterinary Medical Association (JVMA) also established teams, and there is a Relief Headquarters that provides various kinds of support to people when this kind of disaster strikes.

Although I don't know the details, this Relief Headquarters carries out a wide range of activities such as collecting information, replenishing supplies, and forming task forces. They also provide support for animal protection activities when evacuees make temporary home visits, visiting evacuation centers,

and handling public donations. There was also a facility called the Relief Headquarters Shelter, which closed down recently. This shelter was independently established by the Relief Headquarters to protect animals living inside the so-called evacuation or caution zone, which encompasses the area within 20km of the Fukushima Daiichi Nuclear Power Plant. Of course, Fukushima Prefecture is receiving a lot of support.

In line with the acceptance of this Relief Headquarters, Fukushima Prefecture also established a Rescue Headquarters, with the prefecture's Food Sanitation Department providing the head and Fukushima Veterinary Medical Association providing the assistant head of the headquarters. Also, volunteer organizations are providing various kinds of support including in Koriyama City and Iwaki City. Altogether, five organizations have come together to set up Fukushima Prefecture Animal Rescue Headquarters. In Iwate and Miyagi the respective prefectural veterinary medical associations provided the headquarters head position and made arrangements with the respective Prefectural Governments. But in the case of Fukushima, the Prefectural Government had, in 2007, already produced a disaster preparation manual for dealing with animals based on what had been learned from the Great Hanshin Awaji Earthquake. They had asked the Fukushima Veterinary Medical Association for its cooperation with rescue activities. After setting up Fukushima Prefecture Animal Rescue Headquarters on April 15, this organization began collecting public donations and opened its Fukushima No.1 Shelter within the month to take care of animals in need. However, Fukushima's Animal Detention Center had been partially destroyed by the tsunami so Fukushima No.1 Shelter carried out the Center's functions too, which made operations a little complicated.

Fukushima Prefecture issued notices independently and Prefectural Government staff performed vaccinations and other tasks. But it took the lot of effort for the Prefectural Government to ask for the Veterinary Medical Association's support. This was because the Prefectural Government itself was in a mess and its staff members were performing various additional tasks

inside the 20km radius such as recovering bodies of the dead. Under these circumstances, action for animal-related issues was delayed.

This kind of situation came up again and again, as Dr. Yamaguchi - who is with us today - knows only too well. So we held a long succession of meetings with the Ministry of the Environment. After that, I attended meetings between the Prefectural Government and the Veterinary Medical Association on several occasions. Things have not gone very smoothly because the disaster was on such a huge scale. It is so difficult to decide how to proceed and steer a clear course through meetings of this kind.

Apart from the Rescue Headquarters, Fukushima Veterinary Medical Association set up a so-called 'Pet Rescue Support Center'. The Association is divided into seven branches, and we gave much consideration to what each branch could do independently for animals evacuated together with their owners. The Fukushima and Koriyama District Branches set up animal shelters and took care of the rescued animals there. They also made rounds to provide animal health counseling. Moreover, each animal hospital was temporarily keeping animals that had been evacuated with their owners and providing treatment support. Originally, we were doing these things independently but the financial situation eventually became too severe so we turned to the Relief Headquarters for support. From May 18th, we had to rely on the Relief Headquarters for treatment aid. This allowed us to expand treatment for animals whose owners were unknown. However, the aid had to be terminated in October 2011 due to lack of funds. So now we are providing health management for animals kept in shelters. Some veterinarians have applied to the Ministry of the Environment for support and are assisting with activities inside the 20km zone.

These photographs depict the scenes at several different meetings. This first one was a meeting attended by Dr. Yamaguchi to set up Fukushima Prefecture Animal Rescue Headquarters. This one was a meeting involving the on-site head of the Nuclear Emergency Response Headquarters, the Ministry of the Environment, and

Fukushima Prefectural Government at which the parties considered a variety of measures for protecting animals inside the 20km zone additional to the animal protection measures conducted in conjunction with temporary home visits.

Many evacuees gathered in comparatively large cities such as Fukushima and Koriyama. This is an evacuation center located in Azuma Sogo Undokoen Park in Fukushima City. At one time, 2,500 evacuees were accommodated here.

I can't show you an overall view of the entire place because it is simply too wide. Fukushima Prefecture didn't recommend animal-accompanied evacuation. But even so, many pet-lovers took their animal along with them during the evacuation. However, it was officially decided that pets would not be allowed inside the evacuation centers. So, together with President Yamane of the Japan Veterinary Medical Association, we tried to find a building or other place to keep and protect evacuated pets at the evacuation center. However the facility operators refused to provide a place. They told us that this was no time for that sort of thing because they were already desperately trying to handle all the human evacuees. At that time, the situation was indeed very severe, with a great many people crowded together in a space without partitions and only able to eat maybe one rice ball and piece of candy a day, etc. So in such circumstances, when trying to raise the subject of the animals, we were scolded by the facility manager: "What on earth are you saying? We have no time to be dealing with animals now." That was how severe the situation was for the administration. They were utterly incapable of considering the animal needs.

This next photograph shows the distribution of food. Every day, volunteers would visit the place and distribute food in this way. The evacuees would cue for up to an hour at a time, three times a day, to receive food. Everybody would stand in line holding a corrugated cardboard box. If you had a three-member family, you would be given food for three people. This procedure was repeated at every mealtime. Whenever a person went outside, as soon as they returned inside

the site they were measured for radiation. This was not a form of discrimination but observing the situation first hand made me feel uneasy all the same.

From late March, staff from my clinic began visiting the evacuation center periodically. We asked the administrators to prepare a table as shown here so that animal owners could come and consult with us if they were having problems. But some had taken their pets with them into the evacuation center against the instructions of the authorities. Even if they were keeping their pet in their car, they hesitated to talk with us. They had received confusing information including a rumor that if they admitted to having a pet with them, it would be taken away by the Public Health Department and euthanized. So, many people who had brought their pets with them remained silent.

On the surface this is an idyllic photograph. On this day of fine weather, a pet owner has allowed their dog to sunbathe in a parking lot where there is ample space. Actually, the conditions were far from idyllic and the reality behind the scene was pitiful.

I came upon this next scene unexpectedly. A mobile trimming group from Tokyo visited the place and provided shampooing free of charge. Their services were very much appreciated.

As this photo shows, Azuma Sogo Undokoen Park had a makeshift pet corner where Prefectural Government staff and various volunteers posted notices about free pet food or pet sheets, and about keeping pets, etc. However, according to the facility people, when they put out large amounts of pet food it would disappear in no time. All kinds of people would take it away. This demonstrates that action taken to ameliorate a given situation can end up creating fresh problems.

We wanted to set up a facility where those pets being kept in cars could be kept in a more relaxed and comfortable environment. We asked the people running Azuma Sogo Undokoen Park about this many times but could not get a favorable response. Actually, we first asked Fukushima Prefecture who told us we could

have two 5-meter-long tents and several cages. But as it was still cold at the time we didn't think it would be a very good idea to keep the animals in tents. So we thought about the problem some more and turned our attention towards the bicycle parking space at Azuma Sogo Undokoen Park. A third of the area was normally used for bicycle parking and the other two thirds for storage space for people working at a national athletics meeting held at the park. While our request was rejected initially, after some negotiations, it was decided that we could use the central one-third of the space. As you can see, partitions were put up and the area floored and painted. We didn't perform this work ourselves. There is an organization called Higashinohon Pet Kinkyu Kyuenn Team (East Japan Pet Emergency Rescue Team: EJ- Pert). They were initially working in Ishinomaki but said they could come to Fukushima and do this kind of work. So we left it entirely up to them.

This photo was taken in June when the shelter was finally complete and open for use. It was decided that owners putting their pets into this shelter should form a committee to manage its operation. This person here became the chairman of the committee. He was also an evacuee who evacuated together with his pet cat. As it was difficult to take an animal into the evacuation center, he was staying with the animal in his car. However, he developed economy-class syndrome by doing so. Fortunately, he recovered and then offered to oversee the management of these pets. The photos show an explanatory meeting where rules for keeping animals at the shelter are being spelled out. This is the person in charge of the facility.

This rather smart looking facility is the 'dog village' located in the bicycle parking area I mentioned before. This is a trimming room space and, since there is hot water on tap, dogs can also be shampooed here. Originally this place was just a bare concrete facility but by adding air conditioners here and there, what was a former bicycle lot became a reasonably comfortable place..

This is a photograph taken when the shelter was completed. The team staff and the director of Azuma

Sogo Undokoen Park said he had appreciated all the hard work that so many people had put into making the shelter. After the completion he was very cooperative and helpful to us.

This is a radioactivity measurement I took while driving. I was so shocked to see this figure that I turned off the counter from then onwards.

This is one of EJ-Pert's vans. Some of their staff were staying in it.

The following day we were conducting health checks on the animals just before letting them into the shelter. We were administering vaccinations, parasiticides and flea larvicides, but so many reporters from the mass media flooded us that we became unable to do our work.

This is a different evacuation center located at a convention center in Koriyama City called Big Palette Fukushima. This evacuation center was even larger than the one at Azuma Sogo Undokoen Park that we have just been looking at. At its peak, the center held 2,700 evacuees. Even the walkways were crowded with people taking shelter. Inside the building the situation was also terrible, although things might have been worse if there had not been partitions.

So as to create a facility for keeping animals, Koriyama City borrowed tents from nearby municipalities. Three tents were set up: one for large dogs, one for small dogs, and one for cats.

This next photo is not concerned with animals but with bathing. The Special Defense Forces prepared hot water. There is a front room for changing clothes and behind that is a bath for women. From the small size of the bath, one can imagine how serious the situation was.

When I was visiting Big Palette Fukushima, Koriyama Veterinary Medical Association happened to be holding a health course session which had attracted an enthusiastic attendance. A huge number of people had formed a queue to get their pets vaccinated or to

ask the vets about various problems. This scene shows Koriyama City officials talking with staff from the evacuees' municipalities to see how things might be improved at the facility because people would not be able to continue living in tents forever.

This is Dr. Watanabe. Both he and his wife are veterinarians. Their home is about 9km from the Fukushima Daini Nuclear Power Plant in Tomioka, and they had to evacuate after the earthquake. Dr. Watanabe had animal patients in his care and he brought them with him to Koriyama where his wife's family home is located. He rents a barn nearby to accommodate these animals and is operating this facility independently. Despite being a victim of the disaster himself, he works hard to obtain food and drugs for the animals and to keep running this facility.

As this photo shows, a dog has given birth to some puppies. And there are also large dogs at the facility.

This is the No.1 Shelter at Iino on the outskirts of Fukushima City. The shelter was started up in a rented warehouse. Its general appearance is poor, and the management unlikely to win much praise but, under the circumstances, things had to be done this way. The facility housed over 200 dogs at the peak of operations. The operators did their best to manage things despite a shortage of manpower. They received criticism from various quarters but circumstances were forced upon them in that Fukushima Prefecture took control. This meant that there was little room for flexibility. We at the Veterinary Medical Association were in a dilemma because we could have done something more but, ultimately, Fukushima Prefecture was making the decisions.

As I explained before, the Association received a request for support from this place in the middle of May but we were unable to visit at that time. These photos were taken when we made our first visit in June. In such a situation, we can't say that the environment was good. The place has three buildings: this is the building where the dogs are kept, there is another building for the cats, and a third building serving as a warehouse. The dog

in this photo is not weak but he is frantic. This one is dehydrated and in very poor condition.

This is the inside of the warehouse. We received a lot of support from all over the nation and from the Rescue Headquarters. I'm not saying there was no shortage of supplies, but the distribution of goods was comparatively smooth.

This is the cat facility. The space is narrow and the building had problems such as a leaking roof.

As an office, this place is rather shabby - the staff also take rest breaks in here - but even in such an untidy place, Dr. Aki Tanaka, who visited from UC Davis, gave a lecture on shelter medicine and how to conduct veterinary management under shelter conditions. After this visit, she made a further four visits to Fukushima to give advice.

I can't say much regarding the current situation within the 20km zone because I have only entered the area once. So I will just tell you what I saw and felt there, visiting as a layman.

According to a report by Fukushima Prefectural Government issued in August 2011, there were approximately 10,000 cats and dogs living in the so-called evacuation zone prior to the disaster, including both registered and unregistered animals. Of these, just over a quarter of them perished in the tsunami. The head count of evacuees accompanied by animals was small. The figures given here are basically guesses. Volunteers subsequently rescued about 2,000 animals. Of the remaining 5,000 or so, about 80% have since died of starvation or debility. Animals left in enclosed places would have died within about a month. As a result, it seems that approximately 400 pet animals are still surviving inside the zone.

This photo shows us on a visit into the 20km zone, making plans at the Bajikoen equestrian park.

I don't know what the situation is like now, but in June the inspection process at the checkpoint was very strict.

We hardly saw any officers of Fukushima Prefectural Police Department because they had been dispersed here and there. To help maintain order, SDF personnel and police from other prefectural departments came to Fukushima from all over Japan. That situation remains even now. Officially, people cannot enter the 20km zone but various volunteers nevertheless do enter in order to capture or feed animals by either coming over the mountains or from the sea. These volunteers continue to defy security personnel even now.

To officially enter the 20km zone, permission is needed from the head of the local municipality. But such permission is hardly ever granted. After the earthquake struck, security was initially very poor. When I entered the zone, I saw that the doors of all the private homes had been forced open so that the living rooms were left in full view from the road. Every private home had been burgled.

This place had taken in all the neighboring farmers' cows. The animals at the back were all dead, but after obtaining permission, we periodically visited to feed the surviving animals.

This next photo taken around April is one that I have borrowed. As we had expected, the animals abandoned in enclosed environments such as cowsheds were already dead. I don't know how things are now but, at that time, the animals could not be buried without first obtaining permission.

As you can see from these photos, the roads were blocked or totally destroyed almost everywhere so we couldn't travel by car. We had no choice but to walk. At first glance this may look like an ordinary road but the surface has in fact turned into an undulating series of ridges and troughs making it impossible for cars to drive on. These houses also look OK on first glance but in fact they have partially collapsed.

This is a chicken farm in Okuma. Of course, all the chickens were dead.

This is a scene we witnessed often. This dog is wearing

a collar, so it was somebody's pet. As you can see, it has been dead for quite a long time.

These photos were taken in Tomioka, at a location more or less 10km north of the Fukushima Daiichi Nuclear Power Plant. These were animals that had been kept at a school. Of course, they had all died. There would be no end if we started considering all possibilities, but I think we had better start to think about what can be done to save animals kept in schools when major disasters occur.

A farmer who had been evacuated asked us to check on his animals inside the 20km zone and to feed them if they were still alive, so we visited that farm and found some animals alive. We wanted to take this cat back with us but as she had kittens and we couldn't find them, we decided to leave her behind but we gave her plenty of food and water and returned again later. This farmer had been raising small cattle. This picture shows a blue sheet covering a dead cow.

This is a pig farm located about 3km from the nuclear power plant. Looking closely, you can see that here are the back legs, and here is the waist and the backbone of an animal. There are signs that this had once been a living creature. This was the scene before we entered the barn. I was prepared for the possibility of far worse inside. Indeed, these photos depict the situation within. Pigs were laying dead one on top of the other. This was a very large pig farm, but basically all pig farms were like this. In enclosed piggeries, all the pigs were dead. The white substance here is hydrated lime. I don't know how significant that is, as hydrated lime is routinely scattered in such places as a bactericide.

It seems that these piglets were able to get out of the building but they then fell into this tank and drowned while trying to drink the water. When we were getting ready to go back, about five living pigs appeared. We were astonished. This piglet had grown very thin and was badly in need of a drink, so we gathered the water from our bottles and gave it to the piglet which drank it down voraciously. Unfortunately, while we felt great sorrow, we could not take it back with us.

Although the cows in the cowsheds were all dead, the released cows were doing very well. When this photo was taken, it was still June so grass and water were abundant. The cows were not at all thin. In fact they were sleek and running around energetically, although I don't know how they are doing now. Perhaps Dr. Sato will tell us about that later.

This is the entrance to the Fukushima Daiichi Nuclear Power Plant. By this point in time, the radiation level had already reached approx. 50 microsieverts, even if you are inside a car.

When we were driving along the national highways, here and there dogs would come out from the side of the road. When they saw the car they would come up quite close but then keep a distance of 5 to 10 meters. They would never come any closer than that. These bags containing food had been scattered by the staff of the nuclear power plant and the police department. On first glance, they may look sealed but they had been partly opened so that the animals could eat while the bulk of the food inside doesn't get wet when it rains.

This photo was taken very close to Namie Station. Namie is not a very big town, but here, just 50 meters from the railway station, we found a pig having a good time wallowing in a puddle. When we came closer, the animal and its companion adeptly disappeared down an alley, and we later found that they were living in a private home on a wooden floor. They could by no stretch of the imagination be described as thin. All in all, it seems that released or escaped animals such as pigs and also ostriches have done comparatively well in the wild.

Incidentally, we captured several dogs here too and took them back with us. However, due to the regulations in force, these dogs were not allowed into the Fukushima No.1 Shelter. I will explain about this a little later on.

Although evacuees can return temporarily to their homes by car now, between May and August 2011, they were only allowed to collect a limited number of

items from their homes by putting them into the plastic bags shown here. It was a very miserable situation.

This may have been indiscreet, but we couldn't resist taking a snap of what now seems to be such an irony - a signboard which says: "Nuclear Power, Bright Future Energy". So our team used it as the backdrop for a commemorative photograph.

While we were in Minamisoma, we got a call from the Director-General of the Nuclear Emergency Response Headquarters, who requested us to come to the Prefectural Government Office immediately. So we set off from Bajikoen for the Prefectural Government Office, where we met him. He is also a parliamentary secretary of the Ministry of Economy, Trade and Industry and told us that the National Government had received a variety of requests about pets. Could the Nuclear Emergency Response Headquarters do anything about pets in the evacuation zone apart from making temporary visits? So the Headquarters wanted to perform some additional activities aside from those that the Ministry of the Environment was carrying out. This is from a blog entry that he posted at that time.

We were now going into the 20km zone regularly and so we told the people at that meeting what the situation inside the zone was like. There were about 20 officials present from the Ministry of Economy, Trade and Industry and the Ministry of the Environment, and we discussed with them what we could do.

A few days later, we had another meeting with the Director-General of the Nuclear Emergency Response Headquarters and these three people from the Ministry of Economy, Trade and Industry. This person is the Head of Fukushima Prefecture's Food Sanitation Department in addition to acting as the Head of Fukushima Prefecture Animal Rescue Headquarters. This individual is from the Ministry of the Environment, this is Dr. Baba and here are members of Fukushima Veterinary Medical Association. Despite a situation in which there were delicate differences in thinking between the two ministries, we pushed ahead with a plan by which Fukushima Veterinary Medical Association members

could do something more than just temporary visits into the 20km zone and we conducted a couple of operations. However, regulations led to a decision under which all civilians, even veterinarians, would not be allowed into the zone. So the trial plan ended with those two operations. It was decided that animal rescue activities inside the evacuation zone would be conducted by the Ministry of the Environment and Fukushima Prefectural Government, and that civilians should not enter the zone.

We conducted a survey to find out what was going on in the zone with regard to animal rescue activities, although this was only for a short while in April and May. Also, we carried out animal rescue activities together with the evacuees' temporary home visits from May 10th to August 26th. The animals rescued from the zone are kept in shelters managed by the Rescue Headquarters which is operated jointly by the Prefecture and the Veterinary Medical Association. At present there are two shelters. The Prefecture was planning to open a third shelter, but this probably won't be realized. So we are now considering how to continue keeping rescued animals with only the current two shelters.

This shows the situation when we entered the 20km zone for the first time. The head count wasn't very high. The Prefecture and the Ministry of the Environment measured the animals' external exposure to radioactivity. The readings were up to 71,000cpm at the maximum time. Decontamination is considered necessary for anything over 100,000cpm but as most of the levels measured were much lower the animals were considered not to have any internal exposure problems. These days, people are questioning their animals' exposure, but I think this is an issue for the future.

Continuing on the subject of this survey, in May, pet owners tentatively visited their homes. They found their pets, put them into cages or tied them up outside for subsequent collection. In this way, we rescued many animals. After we went in, private organizations were allowed into the zone for the first time towards the end

of the year. They captured animals under the condition that they would take full responsibility for the care of the animals they captured.

This shows details about animals rescued between May and August during the course of temporary owner visits to their homes. The head count of animals rescued in this way was 300 dogs and 191 cats. In addition, many animals were found to have died of dehydration, etc. It was summertime, and even among the rescued animals, a great many were half dead. The number of pets returned to their owners was unexpectedly small. Since this rescue activity was carried out together with the temporary visits, pet owner identities were clear in almost all cases. But even so, many owners were still living in evacuation centers and not yet in a position to take back their pets immediately. Even now, about three-quarters of the animals living in the shelters have not been transferred because their owners have not given up their ownership. So for how long these shelters should continue to be operated is a major issue for the future.

In the wake of the disaster, many Prefectural Government staff from all over Japan came to give us their help or to otherwise support us in our various activities, and this help is still continuing today.

Members of the Task Force including myself are trying to explain to people across the country the actual conditions in Tohoku through talks at academic societies and elsewhere. Last June, two of our members, both veterinarians affected personally by the disaster, talked about the reality of the situation in the disaster area at an academic society called the West Japan Veterinary Forum (WJVF).

This is an organization called 'Dobutsu Kazoku no Kai' (the Animal Family Society). At this meeting last July, we talked about a variety of subjects. The society set about sending a 40-foot trailer and a 20-foot trailer to the disaster area. This photo shows people writing words of encouragement on the side of a trailer after the meeting finished. Dr. Ishida is one of the people writing.

In April of last year, a conference with a very long name was held and various people throughout Japan including college teachers linked their names to it. The conference was aimed not at helping animals per se, but at helping the veterinarians affected by the disaster. Although no veterinarians died in the disaster, a number of them did lose their hospitals. In Fukushima there are some who can't return to their homes or hospitals as their locality remains contaminated by radioactivity. This conference was set up in order to be of some small assistance to these veterinarians.

Under the title of 'Disaster Area Backup Seminar from Hokkaido', some university professors and private tutors are holding periodic seminars to cheer on the veterinarians in Iwate, Miyagi and Fukushima.

The Japanese Board of Veterinary Practitioners held this forum in September. Here too, there was an earthquake disaster corner, and our association, including several veterinarians affected by the disaster, made presentations.

This is the Animal Clinical Research Foundation, which is under the directorship of Dr. Yoshihisa Yamane, President of the JVMA. We have obtained enormous support from this organization including raising a large amount of relief money for Fukushima and the disaster area, and their help in putting up posters, etc.

This is the No.2 Shelter which was finally completed in October 2011. The construction was delayed due to many problems including the failure to achieve consensus (despite holding many meetings), and financing problems. On first impression the facility has a somewhat gaudy design. This is because we borrowed and converted a building that was originally a pachinko parlor. The land area is very spacious with mountains on this side and private homes over that way. Here you can see a wide parking area. It looks as if it could be a roof playing field, but it is actually a holding area. This is where the animals are kept. Two trailers presented by Dobutsu Kazoku no Kai are parked outside of this area. The smaller one originally went to Ishinomaki but

after their shelter closed down it was moved here.

Although I only have a few photos of this facility, this is the dog room and this is the cat room. In both the No.1 and the No.2 Shelters, veterinarians affected by the disaster are in residence as shelter management vets.

This chart shows the shelter's basic operating system. In principle, Fukushima Prefecture's Animal Relief Headquarters is in control. However, for this facility, the Chairman of Fukushima Veterinary Medical Association is the responsible official. The facility is divided into three departments, namely, the Clerical Department, Medical Department, and Rearing Management Department. Each department has its own chief and sub-chief.

As of January 15th, 2012, the head count of animals kept in the No.2 Shelter was 540 dogs and 212 cats. Recently, the figures have changed because animals are gradually being transferred from No.1 Shelter to No.2 Shelter.

This is an animal facility in a temporary housing area. Fukushima Prefecture and each of the municipalities devastated by the disaster requested public funds for such facilities, but all were turned down. This is a facility in Koriyama, which was made by the private-sector team I introduced earlier.

As for public relief funds, Fukushima Prefecture discussed a variety of projects with us and we received a total of about 160 million yen. Of this, the allocation for the Rescue Headquarters was 93 million yen. We have used these funds for the various activities I have introduced, and we currently have 60 million yen in operating funds for the two shelters. We need between 5 and 6 million yen per month to cover shelter operating expenses so, even with 60 million yen left, we only have enough to keep the two shelters going for ten more months.

We have continued applying for public funding. In the beginning, we were able to get 100% of what we requested, but over time funding has been cut back

more and more. At present it only amounts to half of what we request so in reality the money isn't coming in as much as we had expected which is a big problem.

In future, we will need at least 5 million yen per month to keep the two shelters operating. Now we are in the cold season, so will need several hundred thousand yen extra to cover the additional heating and electricity costs. Added to this problem, Fukushima Prefecture recently told us it would no longer provide public funding for medical expenses. So we are now trying to get by on only the public funding and donations coming in to the Veterinary Medical Association. For the future, we have several expensive items on the waiting list. For example, when we return the pachinko parlor to its owners, we will have to restore it to its former condition. Even closing the shelter will cost a lot of money.

There are a great many problems. One issue for the future is that Fukushima Prefecture and Fukushima Veterinary Medical Association don't have the ability to produce a manual on how to rescue animals in times of major disaster. The thing I wish to emphasize most of all is that we want the Central Government to take the initiative in producing a concrete manual. Also, how we collect money and how we use it are both important.

It is also important to make the "way out" of the shelters as smooth as possible for the animals. If owners of the pets being kept in the shelters would agree to give up their ownership, we can take various measures such as transferring them, etc. But currently, up to 70 to 80% of owners are not prepared to relinquish their ownership, so we don't know what we can do. The Prefecture of the Central Government will try to persuade pet owners to give up ownership, but the efforts may only lead to additional psychological distress for owners. Obviously the appeals cannot be made too forcefully.

Animal accompanied evacuation also requires large-scale organization and we believe there should be a manual covering this. Otherwise, even though we recommend animal accompanied evacuation, a variety of problems will continue to occur such as evacuation

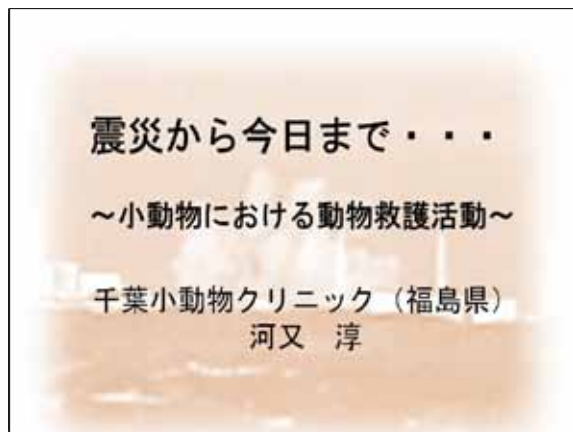
centers refusing to accept animals. We certainly want something to be done about this.

There are also problems relating to publicity. For example, because of the radioactive contamination situation, not many volunteers are prepared to come to Fukushima. We would like to ask you all what we can do about this.

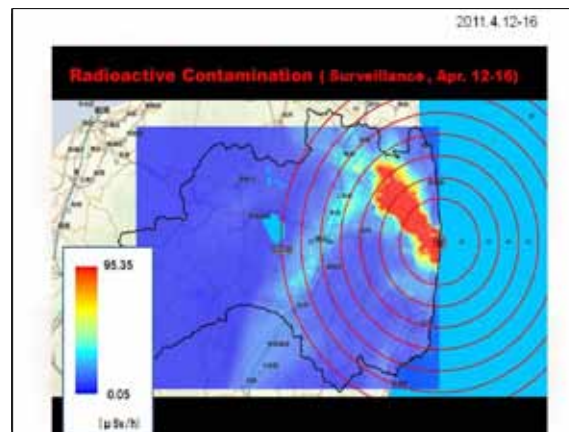
Yet another issue concerns the No.2 Shelter I have been talking about. It would be best if Fukushima Prefecture could operate the facility but, if that proves impossible, we would like Fukushima Veterinary Medical Association or an NPO to keep it running so that it can stay in operation one way or another. By doing this we can at least leave a positive legacy for the future about animal rescue efforts in Fukushima.

In addition, I feel strongly that we must popularize continuous disaster preparedness training as well as discipline training and microchipping for pets, etc.

Thank you very much for listening.



【Slide 1】



【Slide 5】



【Slide 2】



【Slide 6】



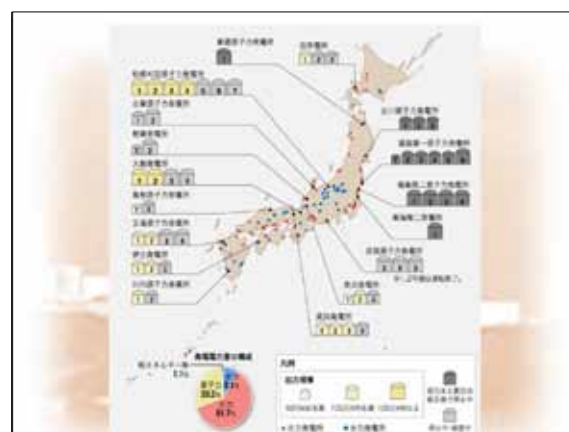
【Slide 3】



【Slide 7】



【Slide 4】



【Slide 8】

**東日本大震災
緊急災害時動物救援本部**


**どうぶつ
救援本部**

財団法人 日本動物愛護協会
公益社団法人 日本動物福祉協会
公益社団法人 日本愛玩動物協会
社団法人 日本獣医師会

3月14日より活動開始

【Slide 9】

福島県動物救護本部活動

2011.7.21 第1回福島県動物救護本部・環境省会議
2011.7.27 第2回福島県動物救護本部・環境省会議
2011.8.5 第3回福島県動物救護本部・環境省会議
2011.8.12 第4回福島県動物救護本部・環境省会議
2011.8.19 第5回福島県動物救護本部・環境省会議
2011.8.29 第6回福島県動物救護本部・環境省会議
2011.9.12 第7回福島県動物救護本部・環境省会議
2011.10.5 第8回福島県動物救護本部・環境省会議

【Slide 13】

**東日本大震災
緊急災害時動物救援本部**

被災地の情報収集(被害確認、必要物資の確認など)
物資運搬・配送(ケージ、フード、動物薬品など)
タスクフォース結成
一時帰宅時の動物保護活動の支援
避難所訪問
義援金交付
救援本部シェルター設置
募金活動など

【Slide 10】

福島県獣医師会の動物救護活動

- 被災ペット救済支援センターの設置(7支部) 2011.3.23
県北・郡山は健康相談会の開催や管理施設の設置
県南・会津地区は各避難所の巡回にて健康相談、物資供給
いわき地区は保健所とともに治療活動等の実施
- 東日本大震災被災犬猫救護対策支援事業
同伴避難動物の各病院での一時預かり(2011.3.11～)
- 被災ペットの治療費助成事業
・県獣単独事業(2011.3.11～4.21)
・東日本大震災被災ペット救護支援事業(2011.4.22-5.11)
・東日本大震災被災ペット救護支援事業(2011.5.18-6.10)
・福島第一原発事故被災ペット救済事業(2011.6.11～)
- シェルター保護動物の健康管理
- 立ち入り禁止区域におけるペットの保護活動

【Slide 14】

福島県動物救護本部 2011.4.15

福島県保健福祉部食品衛生課
福島県獣医師会
郡山市保健所生活衛生課
いわき市保健所生活衛生課
本活動を支援する団体等

【Slide 11】

福島県獣医師会の活動

2011.3.23 福島県、日本動物福祉協会との会議
2011.3.30 福島県、日本動物福祉協会との会議
2011.7.1 原子力災害現地対策本部長、環境省、県との会議
2011.7.12 シェルターメディスンの講演(田中重紀先生)
2011.8.3 原子力災害現地対策副本部長との会議
2011.10.28 第1回東日本大震災動物救護委員会会議
2011.12.22 第2回東日本大震災動物救護委員会会議

【Slide 15】

福島県動物救護本部活動

2011.4.15 福島県動物救護本部のホームページ立ち上げ
避難所への物資支援
2011.4.19 義援金募集開始
2011.4.20 緊急災害時動物救援本部に対する義援金交付申請
2011.4.25 福島市内に仮設の被災動物収容施設を設置
2011.4.27 福島県からの依頼による被災動物の受入開始
2011.5.7 救援本部の携帯サイト立ち上げ
2011.5.9 ボランティア等の飼育管理支援に備え傷害保険加入
飼育動物診療施設開設の届出
2011.5.11 被災動物へのワクチン接種開始
2011.5.18 (社)福島県獣医師会長に対して被災動物の救護
支援の依頼文を発出
2011.6.27 緊急災害時動物救援本部、環境省との合同会議

【Slide 12】

福島市の避難所 (あづま総合運動公園)

【Slide 16】



【Slide 17】



【Slide 21】



【Slide 18】



【Slide 22】



【Slide 19】



【Slide 23】



【Slide 20】



【Slide 24】



【Slide 25】



【Slide 29】



【Slide 26】



【Slide 30】



【Slide 27】



【Slide 31】



【Slide 28】



【Slide 32】



【Slide 33】



【Slide 37】



【Slide 34】



【Slide 38】



【Slide 35】



【Slide 39】



【Slide 36】



【Slide 40】



【Slide 41】



【Slide 45】



【Slide 42】



【Slide 46】



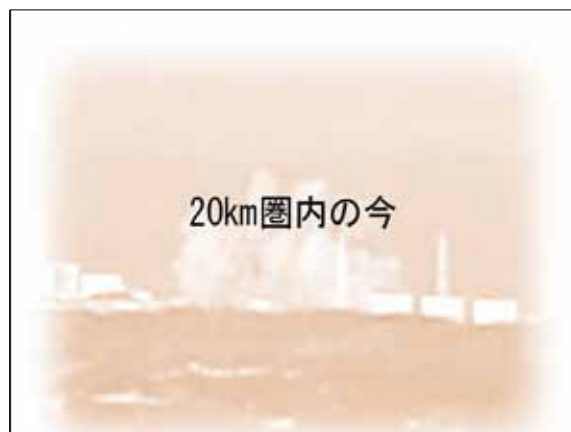
【Slide 43】



【Slide 47】



【Slide 44】



【Slide 48】

2011.8.31

福島県の報告

- ・ 20km圏内に生存していた犬猫の総数はおよそ1万頭と推定
- ・ 津波で26%の2,600頭が死亡
- ・ 同行避難頭数は300頭
- ・ 各ボランティアによる持ち出し推定2,000頭
- ・ 残り5,000頭の80%は飢餓・衰弱死
- ・ 残り1,000頭のうち600頭が行政保護
- ・ 結果的に400頭が現在も20km圏内に生存??

【Slide 49】

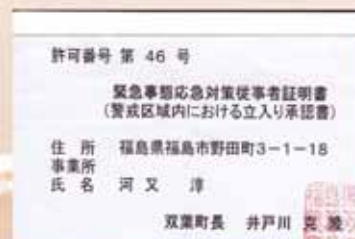


【Slide 53】



団体名: 福島生物資源放射能調査団
 団長: 夏堀雅宏(獣医放射線学教育研究会事務局長)
 副団長: 河又淳(福島県獣医師会)
 事務局: 川崎亜希子(緊急災害時動物救援本部)

【Slide 50】



【Slide 54】

1. 今本 成樹(新庄動物病院 院長)
2. 韓崎 竹彦(北里大学獣医学部獣医放射線学研究室)
3. 河又 淳(福島県獣医師会評議員・千葉小動物クリニック)
4. 神戸 俊平(ケニアの獣医師資格あり。WWF関連の活動や、アフリカの野生動物保護やマサイ族の家畜診療)
5. 夏堀 雅宏(獣医放射線学教育研究会 事務局長・日本動物高度医療センター 院長)
6. 山口 千津子(公益社団法人 日本動物福祉協会 獣医師)
7. 小西 由美子(医師・元都立荏原病院麻酔科医・小西医院 院長)
8. 福島 悦雄(28日のみ)(医師・医療法人良仁会 桜ヶ丘病院 副理事)
9. 川崎 亜希子(公益社団法人 日本動物福祉協会 根本支部長・薬局勤務)
10. 川崎 俊和(ロボットエンジニア)
11. 日向 千絵(横浜 ニュータウン動物愛護会 代表)
12. 鈴木 美和(横浜 ニュータウン動物愛護会・看護師)
13. 藤原 亜希(25日のみ)(関西高校ボランティア・地球生物者会議)
14. 平野 雄吾(共同通信社)
15. 鬼久保 美奈(25日のみ)(NPO法人人と動物の共生をすすめる会理事長・東京都動物愛護推進員・宮科医院)
16. 赤江 なつ(25日のみ)(東京都北区区議会議員・民主党)
17. 大原 克(25日のみ)(民主党衆議院議員青木愛・秘書)

【Slide 51】



【Slide 55】

2011.8.25-26
 南相馬市 馬事公苑



【Slide 52】



【Slide 56】



【Slide 57】



【Slide 61】



【Slide 58】



【Slide 62】



【Slide 59】



【Slide 63】



【Slide 60】



【Slide 64】



【Slide 65】



【Slide 69】



【Slide 66】



【Slide 70】



【Slide 67】



【Slide 71】



【Slide 68】





【Slide 72】

福島県の警戒区域内からの動物保護活動

- 経過
2011.4.28-5.2 警戒区域内においての立ち入り状況調査
2011.5.10～ 原子力災害現地対策本部(緊急事態応急対策拠点施設)による住民一時帰宅に併せ、環境省とともに保護回収活動開始
- 警戒区域内からの動物保護活動
実施主体: 環境省、福島県
協力: 福島県獣医師会、緊急災害時動物救援本部
- 警戒区域内から保護した動物の管理
管理主体: 福島県動物救援本部
- 動物保護施設
第1シェルター(飯野)、第2シェルター(三春)、第3シェルター?

【Slide 76】

2011.6.26

<原子力災害対策現地本部長日記>6月26日 ペットの問題

人が原則立ち入ることのできない警戒区域に取り残されたペットに関しては、全国から多くのご意見やご提言、ご批判がこれまで政府に寄せられております。

今回、私が本部長となり、昨日、警戒区域内を視察して初めてわかった実態を踏まえ、早速、ペットの事中保護の検討を始めることにしました。運よく、今日の夕方から二時間、警戒区域内に入っていただいた獣医師の方々と打ち合わせをすることが叶い、関係者の間で、今後の取扱いなどを確認しました。

一時立ち入りでペットを連れ帰るケースは毎日あるのですが、これまでに連れ出されたペットは250頭余り、まだまだその何倍もの数のペットが残っていると考えられます。そのうちの多くは放たれ、路上にはペットフードが置いてあり、私たちが通りかかると、車を止めてくる犬によく遭遇します。

今回、運よく現場で汗をかくておられる獣医師の方々から実態を教えて頂いたので、この家から放たれてしまっているペットの保護を集中的に実行していくべく、オペレーションの検討を始めました。

【Slide 73】

環境省・福島県の警戒区域内からの動物保護状況

●4.28～5.2 半径20km圏内の動物実態調査(4.22より警戒区域)
犬:27頭 猫:2頭

福島県における実態調査の状況(平成23年4月28日～5月2日)

調査実施日	犬	猫	備考 (放射線量)
4月28日	5	1	3,500～3,600cpm
4月29日	5		400～900cpm
4月30日	4		500～71,000cpm
5月1日	10	1	5,000～9,000cpm
5月2日	3		500～4,000cpm
計	27	2	

【Slide 77】



【Slide 74】

環境省・福島県の警戒区域内からの動物保護状況

●5.10～8.26 住民の一時立ち入りに伴う保護・回収活動
犬:300頭 猫191頭

●9.1～9.16 放浪犬・猫の保護活動
犬:10頭 猫3頭

●8.31～10.23 住民等の情報による状況調査での保護
犬:14頭 猫15頭

●10.24～11.20 放浪犬・猫の一斉保護

●12.5～12.27 民間団体(16団体)での保護活動
犬:34頭 猫:298頭 (自己責任下での飼養管理)

【Slide 78】



【Slide 75】

警戒区域への一時立ち入り(一度目に伴うペットの保護状況)(平成23年5月10日～8月28日)

項目	犬	猫	備考
保護回収数	300	191	
放浪管内	295	178	
撤収管内	5	13	
死亡数	15	28	
放浪管内	13	27	
撤収管内	0	1	
保護数	65	87	
放浪管内	65	87	
撤収管内	0	0	
保護数	4	0	
放浪管内	4	0	
撤収管内	0	0	
逃走数	1	1	
放浪管内	1	1	
撤収管内	0	0	
計	217	95	

【Slide 79】

[illegible]

**東北地区獣医師会
小動物獣医師連絡協議会**

我が国史上最大の、地震強度M9.0を記録した東日本大震災および大津波、そして福島原発事故により東北地区は深刻なる被害を受けました。我々東北地区獣医師会においても状況は日々憂慮される状況にあります。この先の長い道のりを考慮し、東北地区の小動物獣医師が横の連携を密にするための第一歩として「東日本大震災・東北地区獣医師会小動物獣医師会連絡協議会」を設立いたしました。各県獣医師会と協力しながら、東北地区小動物獣医師の支援のために公平性と実効性をもって活動していきます。協議会の趣旨にご賛同いただける方のご支援を心よりお願い致します。

平成23年7月31日～平成25年6月30日

【Slide 88】

動物臨床医学研究所
公益財団法人

東日本大震災における動物救護活動等支援費金にご協力をお願いします

この度の震災で、「犠牲になられた方々のこころの苦しみをお祈り申し上げます」とともに、被害にあわれた方々にも心よりの見舞い申し上げます。

この度の災害は、大地震、大津波、原発事故の三重苦にも関わらず、「既に被災地区では想像を超える規模の中、多くの方々の活動により、復旧に向けて作業が「進められておられますこと」に、心より敬意を表しますとともに、一日も早い復旧と、被災地の方々の健康面の不安が「動向がわかるよう」お祈り申し上げます。

被災状況が「徐々に明らかになる中、復旧で「被災動物に対する救護活動が」、獣医師会及び「関係団体により開始されました。そこで「被災動物臨床医学研究所」として、協力ながら「お役に立てれば」と思い、救護をすることとなりました。お寄せ頂きました獣医生は、被災地で「被害を受けた動物達の救護活動への支援のために有能に活動して頂きます。皆様のご協力に「支援」に「協力」を宜しくお願い致します。

復興推進動物臨床医学研究所理事長 山根義久

【Slide 92】

2011.8.29

**被災地応援セミナー
from HOKKAIDO**

日時：9月4日 10:00～16:00予定
(ヒルズランチョンセミナー1時間参加)
場所：福島グリーン・パルク
<http://www.fukushima-park.com/event/>
参加費：無料
講師：群馬大学 藤澤 剛 先生
北海道大学 高木 剛 先生
東北大学 梅田 謙二 先生
ノースラガ 関川 由美子 先生
講師：復興推進動物臨床医学研究所 山根義久 先生

主催：東日本大震災・東北地区獣医師会
動物臨床医学研究所（協議会賛助会）
幹事：山根義久（月）

お問い合わせ：山根義久 先生
TEL: 024-524-2729 FAX: 024-524-2828
Email: hironori@acrf.jp

【Slide 89】

**第2シェルター（三春）
2011.10～**

【Slide 93】

2011.9.16-18

JBVP

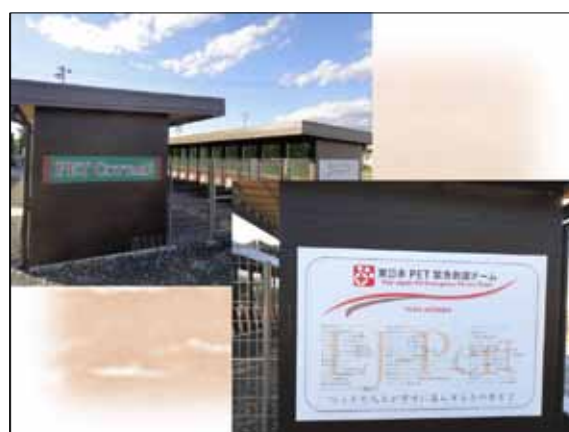
【Slide 90】

【Slide 94】

2011.9.16-18

【Slide 91】

【Slide 95】



福島県動物救護本部での保護状況

平成24年1月15日現在

犬保護総数	540頭(飼育管理中251頭, 返還・譲渡289頭)
猫保護総数	212頭(飼育管理中73頭, 返還・譲渡139頭)

内訳	
第1シェルター	福島県獣医師会
犬頭数 115頭 猫頭数 33頭	犬頭数 13頭 猫頭数 18頭
第2シェルター	
犬頭数 80頭 猫頭数 22頭	

外部協力

(仙台市獣医師会、山形県獣医師会、栃木県獣医師会、ボランティア)
犬頭数 43頭 猫頭数 0頭

義 援 金

【Slide 104】

これまで、国内外の実に多くの皆様より心温まるご声援、ご支援をいただきましたこと深く御礼を申し上げます。

福島の行く先はいまだに見えぬ状況ですが、いつの日か皆様に希望を持った収束宣言ができる日を願っております。

どうか末永いご支をお願い致します。

【Slide 109】

義援金 158,398,607円(平成24年1月17日現在 利息1,327円含む)
(内 93,660,000円が緊急災害時動物救援本部からの配分)

【これまでの主な使途】

シェルター借り上げ費用(光熱水費を含む)	9,654,240円
第2シェルター設置、既存シェルターの改修(大型エアコン設置、隔離室設置、その他被災動物のQOL(生活の質)の向上を図るための改修等)	59,648,776円
消耗品代(サークル、食器、トイレ容器、ネコ砂等)	7,402,243円
内・外寄生虫駆除剤、ワクチン、その他治療等に用いる医薬品代	2,667,558円
シェルター運営にかかる委託料	13,457,641円
巡回診療獣医師手当及び動物病院預り費用	3,548,274円
その他、保護活動にあたって使用した経費	3,676,785円
総計	100,955,467円
残金	58,343,140円

【Slide 105】

今後の課題

1. 大規模災害に向け大きな組織を作る
(国、県、県獣医師会など)
2. 資金の調達
3. シェルターの出口のスムーズ化
4. 同行避難動物への更なる対応
5. 広報活動
(里親、一時預かりの啓蒙活動)
6. 動物管理センター設置に向けて活動
7. 動物飼育者への防災教育や準備の徹底

【Slide 108】

義援金申請と交付決定の内容

No	申請元(市町)名	申請事業の名称	申請年月日	申請額	交付決定年月日	交付決定額	備 考
1	東区 内蔵分 (121,000円分×30%)	被災動物の保護 対策として、被災 した動物の飼育に 関する経費	平成23年4月10日	3,600万円	平成23年4月21日	3,600万円	100%
2	東区 内蔵分 (121,000円分×30%)	被災動物の保護 対策として、被災 した動物の飼育に 関する経費	平成23年4月10日	3,600万円	平成23年4月21日	3,600万円	100%
3	東区 内蔵分 (121,000円分×30%)	被災動物の保護 対策として、被災 した動物の飼育に 関する経費	平成23年4月10日	3,600万円	平成23年4月21日	3,600万円	100%
4	東区 内蔵分 (121,000円分×30%)	被災動物の保護 対策として、被災 した動物の飼育に 関する経費	平成23年4月10日	3,600万円	平成23年4月21日	3,600万円	100%
5	東区 内蔵分 (121,000円分×30%)	被災動物の保護 対策として、被災 した動物の飼育に 関する経費	平成23年4月10日	3,600万円	平成23年4月21日	3,600万円	100%
6	東区 内蔵分 (121,000円分×30%)	被災動物の保護 対策として、被災 した動物の飼育に 関する経費	平成23年4月10日	3,600万円	平成23年4月21日	3,600万円	100%
				申請額計 21,600万円	交付決定額計 21,600万円		

【Slide 106】

今後の主な支出予定

1. シェルター管理運営にかかる経常費用
(1カ月平均約500万円超)
2. シェルターでの獣医療費
(昨年11月以降は全額県獣負担)
3. 大規模一斉保護にかかる費用
4. シェルター閉鎖時の撤収費用

【Slide 107】

東日本大震災における被災動物対応の現状と今後の課題 —放射性物質汚染への対応を考える—

The Current Situation Concerning the Handling of Animals Affected by the Great East Japan Earthquake - Considering Responses to Radioactive Material Contamination

福島県 酪農業協同組合 生産部診療課 課長／獣医師・佐藤 利弘
Toshihiro SATO, Veterinarian, Medical Care Division Head,
Production Department, Fukushima Prefecture Dairy Farming Association



Unlike the previous speaker, who talked about small animals, my main focus will relate to industrial animals. I will of course also speak about the situation inside the evacuation zone but I should mention from the start that I have not been inside the zone myself. Nevertheless, as an industrial official of sorts, I have handled a variety of information resources including stories and reports made by colleagues from my Association who did make temporary visits into the evacuation zone. From such sources I have produced the materials I am going to share with you today.

As I am connected with Fukushima Prefecture Dairy Farming Association, I will be centering today's talk on dairy cattle. As an overview, I am first going to talk about the events that happened in Fukushima Prefecture approximately one year ago.

At present, I live in Koriyama City in Fukushima Prefecture. This is the newspaper delivered to my home on March 12th, the day after the earthquake. You saw a picture of the same newspaper in a slide shown by Dr. Ito earlier. I saved this copy, keeping it in a bag for more than half a year.

I remember that the March 13th edition of the newspaper didn't arrive, and I thought that the newspaper shown in Dr. Ito's slide must have been this particular edition. The news about the earthquake within the prefecture was like this. As you can see, the tsunami was reported in many places.

Regarding the disaster situation, as Dr. Kawamata was saying just now, Fukushima's situation was to some

extent unique. There were fewer deaths due to the earthquake and tsunami in Fukushima than in the prefectures further north but it is unique in that it also suffered a major nuclear accident on top of the earthquake disaster.

This is a photograph taken using a mobile phone on March 11th, the day of the earthquake, just after the quake hit. Immediately after the shaking died down, I could see cracks in the ground here and there and I thought it would be a good idea to photograph them. However, I don't have any of the photos I took after this one so when I later show you photos of my office and other places, I will use photos taken by other staff members. This photo shows the scene of the earthquake. I heard that the force of the tremor here was measured as 6 upper. The side of this cattle shed has been crushed and the cows gathered here are almost in panic trying to get out. Here is my mobile health clinic and below this place is an embankment that was created by leveling a mountain. When I look back now, because the ground had been so weakened it would have buried the road below if it had collapsed and I would have been unable to get back. Inside this building is a processing room where the refrigerator has slid to one side and the roof has come down. This was the only actual photo I took under these conditions.

Here is a map of Fukushima Prefecture. At the time of the earthquake I was here, in Shirakawa City. I have homes in Shirakawa and in Koriyama, and the office where I work is in Motomiya City. The distance between Shirakawa and Koriyama is just under 50km. When driving between them I usually take the

expressway but even when I use the ordinary road the journey only takes about an hour. After the earthquake the expressway was obviously closed and, along the ordinary road, there were landslides or subsidence points in many places. Because such falls had narrowed the navigable road width, only one lane was available. This meant that both traffic directions had to alternate and congestion was inevitable. Because National Highway 4 was jammed with traffic I was unable to go directly home and I had to take an alternative road. But even taking advantage of this indirect route I remember how it took me about five hours to make the usual one-hour journey from Shirakawa to Koriyama. Once there I was able to confirm that my wife and children were safe and then checked on the situation at my work place. I also found out about my parents and their situation. They were at our old family home in Tamura City. All these checking activities filled the rest of the day. I was able to return home by 11pm but around 2am there was an after-shock so I hardly slept that night. That's my recollection of the day of the earthquake.

This is a photograph of my office building in Motomiya City. As Dr. Kawamata said earlier, the situation differed from place to place but I heard that the extent of damage to the buildings themselves was not so great. Dairy farmers reported no direct damage to cattle sheds, although processing room equipment units were a complete mess, of course.

The main immediate problem was not so much the destruction of buildings but the problem of broken "lifelines" for electricity, gas and water supplies. In the case of livestock farming, and dairy farming in particular, it is impossible to operate on a daily basis without electricity or water. In the northern area of Fukushima Prefecture, the lifeline situation was severe. Many farms were using subterranean water obtained by boring wells, but with no electricity to power the pumps, the water stopped flowing. I believe Fukushima City also experienced many power cuts. Due to past incidents, some farmers did have off-grid power generators but because most of these units had not been run on a regular basis their engines were not in perfect running order and they proved unreliable.

As for traffic, I placed marks to indicate places where the roads had collapsed to a serious extent and where the possibility for restoration were poor. This situation continued for a while. Also, most telecommunication links were completely severed. Even mobile phone connections were difficult to maintain and we had to dial several times to get through. So we had a lot of trouble contacting with other people at that time.

As for food, just after the earthquake I remember buying about twice as much bread, etc., as usual from a convenience store on my way home but, after that food had virtually disappeared from all the shops.

Then, gradually, fuel shortage became the big problem. Immediately after the earthquake things were not so bad but the situation grew worse little by little. On the evening of the earthquake day I filled up my car on my way to my parents' home in Tamura City. This was out in the countryside and the gas station was still open. On the morning of the next day, I saw lines of vehicles including private cars filling up at gas stations. After that, supplies were cut off completely and there was absolutely no prospect of refueling. In addition, because of the nuclear accident, everybody began thinking that they would need to find a way to evacuate to a far-off location. Obviously they needed to prepare enough gasoline to be able to travel distances beyond 100km when the time came.

News was reported on a piecemeal basis, and there was little information about the actual nuclear accident situation. People were saying, "I saw smoke coming out of the power station on TV, but what's going on?" There was little from the media in terms of specific evacuation information.

At work, I first checked on the safety of other staff members. When I got to my office I confirmed the damage status to our related facilities and buildings, discussed what we should do next, and tried hard to evaluate what we would need to do and prospects for the future. This work took about two or three days.

This is a communications record table from that time. If we were having trouble making contact with people, when I was able to reach them, I tried to keep a record of each instance like this. This is a photograph taken in the office. First of all, we systematically worked to confirm safety, fuel quantities, and staff member movements.

The next slide shows the congestion as vehicles waited for refueling at a gas station after the earthquake. The station was actually closed but a rumor had spread that it might be possible to obtain gasoline there which led to this queue of vehicles forming in front of the station. My impression is that, as time passed and information tools such as Twitter and Mixi began to be used more effectively, people became more aware of the opportunities that came along to obtain fuel.

However, the situation for refueling service vehicles remained severe. 'Emergency vehicle' designation as shown in this photograph became necessary. With such a designation certificate, drivers of hospital-related and other emergency vehicles could obtain limited amounts of fuel at gas stations involved in the scheme. However, because counterfeit documents also began to proliferate in Fukushima and Koriyama cities, local officials restricted the number of permits issued. Even with a designation certificate, separate identification documents became necessary. I heard that some people who already had emergency vehicle designation certificates resorted to driving onto the expressways just to obtain fuel at service area gas stations.

This photograph was taken in front of a supermarket. No rationing system had been introduced and a queue had already formed in front of the store before it opened. A system of letting customers enter in groups of 20 at a time was operated. Supplies in the store were running low, and naturally there were no natto or milk products available.

On the work front, we had to inform association members and other farmers about the association's own damage and our milk collection capability. Basically, milk collection could not be carried out because fuel

supplies and other distribution-related items had been cut off. The milk processing plant itself was also damaged. Of course, we were also unable to continue to supply feed. Although farmers continued their milk production, the milk was not in a fit condition to be shipped. Conveying information of this kind to farmers was one of the association's first priorities.

I was overseeing medical care services and, due to the earthquake situation, we could only respond to emergency cases. I instructed staff "to minimize the distance travelled by our ambulances to provide medical care efficiently each and every time we go out." As for breeding dairy cattle and trading calves, the usual auctions could not be held because of damage to the livestock auction marketplace. The slaughterhouses and related facilities to which beef cattle are usually shipped were also damaged and there was no prospect of them reopening in the foreseeable future.

In the light of this situation, the Ministry of Agriculture, Forestry and Fisheries (MAFF) and the National Federation of Dairy Co-operative Associations (Zenrakuren) issued written notices concerning cattle rearing management. They asked farmers, for example, to nurse calves on whole milk in order to reduce the amount of milk having to be discarded. I will talk more about this later, but the MAFF sent us documents on livestock feed management following the nuclear accident, and we notified the association's members accordingly.

Our thinking with respect to the emergency was that, in the case of dairy farming, it would be difficult to suddenly stop milking the cows and, of course, in order to produce a lot of milk cows usually consume a lot of feed. So under a situation in which feedstuff supplies are interrupted we set out to manage things so that the cattle would get by on the available feed and live longer, even if leaner. But managing this plan in practice proved to be a problem. Reducing the amount fed to the cows did reduce the volume of milk they produced but, as the practice continued, the animals began to develop a variety of different illnesses.

Based on the above situation, we produced and distributed notices informing farmers about certain points of caution and advising “in such and such a case, please take the following course of action.” Also, with regard to anticipated illnesses, I remember we sent out advice notices saying, “In this situation, please note that such and such a disease can easily occur.”

Actually, well before the earthquake, we had experienced some similar situations. For instance, in 1980, Fukushima Prefecture suffered heavy snow which caused a breakdown in the distribution system. In 1998, heavy flooding had also affected the prefecture which resulted in similar distribution problems. But such past problems had been confined to limited areas whereas this time the situation affected the entire prefecture. So while we were able to apply know-how gained from past breakdown experiences it was still very difficult to gauge future recovery prospects for such a prefecture-wide problem.

For dairy farmers, throwing away good milk is obviously a hard thing to do both psychologically and from a business standpoint. To try and lessen this problem, I remember issuing guidance notices to ask farmers to pay attention to feeding details. For example I suggested they feed cows on grass only in order to reduce the amount of milk produced, etc.

Changing the subject to address damage to buildings, the March 11th earthquake caused little damage to buildings in Shirakawa. But one month later, on April 11th, there was an aftershock measuring above 5 on the Japanese earthquake intensity scale. I heard from many people that this tremor caused considerable damage to farm houses and other buildings.

The April 11th earthquake had its epicenter near Iwaki (about 30km south of the Fukushima Daichi Nuclear Power Plant). This photograph shows where a seismic fault slipped during the quake. At that time I was visiting farms in Iwaki as part of my work, and I took this photograph during my journey. The fault jumped by about two meters. It was the first time I had ever seen a fault slip with my own eyes and I was very

frightened. This is a photograph of a cypress plantation where the trees along the fault line have fallen and are standing at an angle. This continues for about 2km through the plantation. Witnessing this with my own eyes made a very powerful impression on me.

The industrial animals or livestock field can be broken down into a rough classification as shown here. Industrial animals include, first of all, cattle, which are sub-divided into dairy cattle, commercial cattle, and beef cattle. Other cattle classifications include breeding wagyu (Japanese cattle), so called stock cattle, and wagyu veal calves. Next come pigs, which include breeding pigs and meat pigs. As for chickens, there are broilers and layers, while horses are divided into breeding horses, commercial horses and tourism horses. Fukushima is well known for the Soma-Nomai Festival (in which participants dress as Samurai on horseback) and horses are kept specifically for this purpose.

This data is also from somebody related to the prefectural government. These figures show the numbers of animals being raised about a year before the earthquake. Actually, this data is for the Soso District, a costal jurisdiction with approximately 2,700 dairy cattle, 10,000 beef cattle, 400 horses, 40,000 pigs, as well as the figures for sheep, goats and chickens. Of these, the figures for animals being raised inside the evacuation zone were 1,400 dairy cows, 5,500 beef cows, 127 horses, and 34,000 pigs.

Let me repeat that the earthquake or the tsunami of March 11th, 2011 caused almost no direct damage to livestock in this region. I heard of only one farm being damaged, and that was no longer operating. An empty cattle shed was washed away in the tsunami. However, there were no reports of livestock having been taken by the tsunami.

The southern part of Fukushima Prefecture suffered little direct damage from the earthquake. Lifelines such as electricity, gas and water supplies were not affected in most places, and there were no problems with buildings or facilities. What was different after the

earthquake was that feedstuff was no longer delivered and milk-collecting trucks stopped coming to farms. Apart from that the situation on most farms was normal.

There was an animal feed manufacturing plant in Ishinomaki in Miyagi Prefecture, but it was badly damaged by the disaster, and it proved very difficult to make it operational again. So for feed supplies we had to turn to a plant in Kashima in Ibaraki Prefecture. The feed makers had a hard time, but they were able to respond to the emergency demand.

The milk from these farms is usually shipped to the dairy plant at Fukushima Prefecture Dairy Farming Association, where I work. Naturally, the earthquake caused damage to the plant and, while we tried as hard as we could to effect repairs, it took almost two weeks before we were able to resume operations.

After that, the number-one issue was physical distribution. Along with the fuel supply problem, this was an extremely severe problem.

In addition, we had the nuclear accident to deal with. Farmers living inside the evacuation zone, including those who kept animals, were ordered to evacuate. Of course, some people in designated areas were told to evacuate immediately after the earthquake, but most were instructed to evacuate afterwards as the nuclear accident unfolded. One problem was that the instructions given were changed. For instance, these instructions were finalized when the previous designated area was changed on April 22nd. Initially, designated 20km and 30km zones were established and the general agreement of all was requested. But later, after this was changed to a systematic evacuation zone, a considerable number of farmers found themselves on the borderlines. They faced a tough situation in which they had to evacuate.

As all this was going on, the feeding environment also changed. Surveys revealed that in the latter half of 2011 the situation had reached a point where many farmers were unable to use feed or maintain the

production cycle, including the disposal of manure. In particular, because the livestock industry operates on a production cycle including the handling of feces and urine (as well as animal feed) radioactive contamination had become a big problem. Simply throwing away feces and urine would create enormous problems within a production cycle for producing products using raw materials. And naturally, this also touches directly on the “food safety issue”.

Earlier I mentioned the initial evacuation instructions given to people living in the 20km and 30km zones following the nuclear accident, which had a negative impact on livestock management. A major turning point came with the zoning designation that came into effect on April 22nd. Up until that time, even though farmers had evacuated from their homes, they were still able to keep their cows by commuting back and forth between their temporary homes and their farms. There were also some farmers who ignored the evacuation instructions and remained home while continuing to tend their animals. I have no way of confirming the story, but I did hear from a reliable source about an elderly couple living 3km from the Fukushima Daiichi Nuclear Power Plant who did not evacuate but instead continued to tend their cows.

Next we come to the topic of livestock evacuation. I heard that, immediately after the earthquake, some farmers requested livestock dealers to completely evacuate their livestock. But despite these measures, the actual situation was that animals taken out of Fukushima by dealers could not be sold. In the end, there was no alternative but to return them to their places of origin.

During this time, farmers considered various ways to evacuate their animals, such as putting cattle with the best pedigrees into the care of acquaintances living outside the evacuation zone. Some farmers inside the 20~30km zone (where residents were instructed to remain indoors) also attempted to temporarily move their animals.

This was a problem. As was shown in the slide a little

earlier, first of all, the evacuation zone was designated. The livestock were then tethered and left, or else put out to pasture. This remains the case even now because claims for compensation are involved. Many farmers are in a situation in which their livestock are being kept in this way while their dairy business is temporarily closed, or else they have gone out of business altogether.

As for the planned evacuation zone, in the beginning, according to the government ordinance, livestock were to be left in the same way as in the earlier evacuation zone. However, the new zone covered a very wide area, and on top of that, it would be hard for the industry if so many production resources were lost. So after discussing with Fukushima Prefecture about the method and procedure for transferring livestock, we decided on some rules including the issue of external radioactivity screenings. Then we transferred livestock to other areas within the prefecture on a temporary basis. It was decided that the transfers would be carried out during May, which was the time limit for the planned human evacuation. They went ahead in line with the procedures decided.

Regarding the area designated as the emergency evacuation preparation area, following the designation, milk shipment controls etc., were put into effect for the period until the end of June. After this period, normal production and shipments were resumed.

Many radioactive hot spots were found in Fukushima City. This problem affected farmers more than other residents. Some farmers were found to have hot spots on their land, others were declared to be OK after individual examinations were made and a third group had to close their businesses due to radioactive contamination.

When the earthquake struck, this place suffered direct damage and it took about two weeks before a recovery was achieved. Then there was an order to stop shipments because radioactivity was detected in raw milk. Indeed, except in the Aizu district, the production and shipment of milk has remained suspended until

now. For almost two months following the earthquake up until early May, the situation was that no milk could be shipped to market throughout Fukushima Prefecture. However, although there were still various debates ongoing, milk processing factories began operating two weeks after the earthquake. Because local raw milk could not be used the business owners brought in raw milk from Iwate Prefecture.

The restoration of facilities such as the auction market and the slaughterhouses took between two or three weeks. Although beef cattle distribution, including to the slaughterhouses, did restart we then had a rice straw problem in July and radioactive cesium was detected in beef. So beef cattle shipments stopped again from July until the middle of August.

The general public was not informed about it but we also had a dead cattle problem. Any cattle that died on family farms had to be examined for BSE. Procedures dictated that such livestock carcasses were sent to the Livestock Hygiene Service Center to be examined for BSE, and then sent to Aomori Prefecture where they were handed over to industrial waste disposal operators for rendering. However, because radioactive contamination was detected in the meat and bone of some carcasses after disposal, the transport of livestock carcasses into Aomori was temporarily prohibited. Accordingly, a special measure was put into effect in Fukushima, under which farm households were instructed to bury any cattle that died on their premises. Before doing so they were required to obtain the permission of not only the Ministry of Agriculture, Forestry and Fisheries, but also of the local Public Health Department. The latter would issue orders that the burial must not take place anywhere near water sources and must be performed to a depth of so many meters. This order was related to the Rendering Plant Control Act. Later on, similar stories came out from inside the evacuation zone. In any case, with this special measure, the disposal of livestock carcasses was speeded up. Early on, the carcasses were kept refrigerated at the Livestock Hygiene Service Center. But it was when the center became full that the rendering plant was unable to process carcasses. Even

after the rendering plant restarted operation, within less than a week, processing halted again because radioactive material was detected in meat and bone. This situation continued until June.

When evacuees began to make temporary visits to their homes inside the evacuation zone, livestock carcasses were covered with blue sheets and sterilization carried out using hydrated lime. There was a suggestion to dispose of carcasses in advance of the visits in view of public hygiene issues and the potential psychological damage to evacuees.

The reason why carcasses could not be buried and why they had to be covered with blue sheets and sterilized with lime was because suitable instructions for processing matter contaminated with radioactivity was not specified in the Act on Special Measures Concerning Nuclear Emergency Preparedness.

With regard to the treatment of feeding livestock in the designated area, until April 22nd, farmers were allowed to move such animals independently. Up until that date, although there were gates in place, people were still allowed to enter and leave the evacuation zone. But from April 22nd onwards, solid barricades were set up and people were ordered to remain outside, with the result that farmers simply had to leave their livestock behind in the evacuation zone. As far as possible, some livestock in the planned evacuation zone were transferred to other locations within Fukushima Prefecture.

Eventually, in a so-called “mobile sellout”, farmers elsewhere in the prefecture were asked to purchase as many cattle as possible at a temporary auction market, and in this way a significant number of cattle were transferred out of the zone. There were also some cases where farmers were able to sell their cattle outside of the prefecture. At that time, the prefectural government made a regulation under which the external exposure condition of cattle was to be checked prior to transfer, with one cow or bull per family farm to be examined as a monitoring animal. This animal was to be slaughtered and, provided that its meat contamination did not

exceed the 50 becquerel standard, the other cattle from the same farm could be shipped outside of the prefecture. Even so, in reality, the cattle that were sold outside the prefecture did not sell at the subsequent December auction market and had to be returned to Fukushima.

Later, I will be showing some slides of livestock inside the evacuation zone. Problems such as the abandonment of livestock carcasses and so-called ‘runaway’ animals are happening even now. Also, the situation with pig and chicken farming is just as the previous speaker reported.

I suppose many of you find it difficult to imagine the shape of the map of Fukushima Prefecture. Actually, it has a shape a little like that of Australia basically. Lake Inawashiro is located in the center; the Aizu district is on the west side; Nakadori, with the cities of Fukushima, Koriyama and Shirakawa, occupies the central area; and Hamadori, with cities such as Iwaki and Soma, is on the east side. Here are the Abukuma Mountains. There is a concentration of livestock farmers around here. There is a nuclear power plant here, and here is Iitate Village. From Iitate to the nuclear power plant flows the Ukedo River. This river supports salmon, which swim slowly upstream through this gorge.

Regarding the evacuation zone, as decided after the earthquake, at first an order was given for people living between 20 and 30km from the Fukushima Daiichi Nuclear Power Plant to remain indoors. Among livestock farmers, there were those who wanted to continue operating their dairy businesses and others who took the disaster as an opportunity to stop dairy farming. (Eventually, some of them moved to other places and reestablished their dairy businesses there). At first, dairy farmers naturally complied with the evacuation orders for the 20km and 30km zones. But, later, when the designated areas order was issued, while some farmers were delighted (because it meant they were still all right), there were others who felt, “I’ve already made my decisions, so it’s too late now.” Also, as I mentioned earlier, with the detection of hot spots, two family farms were identified in zones where

hot spots were discovered and, following a second survey, one household had to close down its business.

As Dr. Ito mentioned, notices such as “Don’t feed cows on grass” and “Don’t put cows out to pasture” were sent out to give guidance with feeding management.

As I mentioned during my outline explanation there was a period after the earthquake when raw milk shipment was impossible. A ban on the raw milk shipment was imposed which was later replaced by the present raw milk shipment stop order. So, after the earthquake, Fukushima Prefecture made sure that no local milk circulated in the market at all and, when the milk processing plants did start up two weeks later, the raw milk used was produced in Iwate Prefecture.

I’m afraid this slide is somewhat detailed and hard to see. Monitor surveys uncovered about 15 samples with readings above the standard levels. In the beginning, it was radioactive iodine that was detected. I heard that the highest levels recorded were approximately 50,000 becquerels. These days the highest levels are for cesium at about 5,200 becquerels.

These black circles are dairy processing plants. There are two places in the Fukushima City area and one each in Motomiya, Koriyama and Aizu. I don’t believe the plant in Aizu was subject to any shipment controls.

It is a very tough job for farmers to dispose of raw milk on their own. One method is to sprinkle the milk onto fields or grassland, but this cannot be carried out repeatedly in the same place. This is because, in small amounts the milk can be a fertilizer, but if too much is spread on the ground rancid milk prevents grassland from being used. At one farm I visit, their shipment volume is 4 to 5 tons per day which is far too large a quantity to sprinkle on grassland. So they have dug deep holes and pour the milk into them. In the hole shown here, about 50 tons of milk has been thrown away. With the passing of time, the milk has evaporated and the volume reduced, but the milk surface has become so hard that a cat can walk on it. The farmer has dug such holes in four places and disposed of about

200 tons of milk this way.

Concerning the resumption of milk shipments, several procedures have had to be followed. The basic rule is that the raw milk must be examined every week. If the radioactivity level is found to be below 100 becquerels for three successive weeks, the milk can be shipped. Raw milk shipments were resumed under this rule. Eventually, the monitoring examinations were carried out weekly in the cooler station units at the dairy plants. These examinations are continuing even now.

There have been no cases of milk found to have a higher reading than the standard level since shipments were resumed. Basically, raw milk collection was restarted on April 18th and milk shipments resumed on May 3rd apart from in the designated areas.

However raw milk collection has not been resumed within the evacuation zone or the planned evacuation zone. Some of the dairy cows remain there but others have been transferred according to a set of procedures.

Regarding dead cattle, because radiation was detected from carcasses as well as from meat and bone, carcasses could not be rendered “up-stream”. So, instead, the method of burying carcasses was employed. Now, however, we have changed rendering operators and carcass rendering is proceeding as normal.

We had cattle at many stages of life, including calves, newly pregnant heifers, etc., Until April 21st, the decision to transfer these animals was left up to the judgment of their owners. But after that, designated area movement restrictions were imposed.

Regarding the planned evacuation zone, under the situation at the time, it was impossible for individual farmers to sell all their animals and transfer them, so the Dairy Farming Association secured temporary places to hold them. We renovated closed-down or empty cattle sheds and moved the animals in groups. At first, during discussions on what to do about the evacuation zone, Fukushima Prefecture considered leaving or transferring all livestock, including those

that were in the planned evacuation zone. The local authorities and the organizations involved held discussions and came to a decision about how to proceed. Consequently, the Dairy Farming Association secured temporary evacuation places and transferred the cattle from the planned evacuation zone to these facilities.

This photo shows one of the empty cattle sheds we restored. In moving the cows, we faced a lot of limitations. In keeping with the Act on Domestic Animal Infectious Diseases Control, we had to check that the animals were not infected with diseases such as Johne's Disease (which would mean they could not be transferred). And we had to follow procedures under the 'livestock friendly insurance system'. If, in the event of an accident during transfer, there were any reports mishandled when applying for insurance payments, insurances would not be paid. Moreover, since cattle were gathered from various stock farms, we had to perform a certain degree of preventative sanitation. So we carried out the minimum necessary vaccinations, dermatological measures, tick treatments, etc.

In particular, cattle sheds that have been left empty are prone to harbor ticks due to the likelihood of wild animals having used or visited them. There is also likely to be mold growing in such places.

Following the earthquake, a variety of concerned organizations sent aid supplies and donations to the disaster site and to organizations working on the front lines. The largest donation came from Hokkaido, consisting of several consignments of wrapped roll-bale silage. In particular, there are many farmers in Hokkaido's Ashoro district who originally came from Fukushima. Centered on an association formed by these people, JR Ashoro launched its own disaster site support activities, including a periodic provision of aid supplies in April, May and June. Just the other day, similar aid supplies were delivered to the Dairy Farming Association, and a portion was used as feed for animals kept in the temporary evacuation cattle sheds. The rest was distributed among the members of our Association.

Regarding transfer of the cattle living in the planned evacuation zone, there are various rules to follow as well. One is that we must carry out radiation exposure screening tests before cattle transfers. The same applies when shipping cattle to auction markets or to slaughterhouses.

According to a veterinarian working for the Prefectural Government, the very highest readings obtained from these tests were about 12,000cpm. Decontamination is required in cases where the rate exceeds 100,000cpm.

Even after cattle have been transferred from the designated evacuation area, farmers are not necessarily allowed to transfer or resell their animals without specific permission. Once resold, the cattle are presumed to be "for human consumption" so there are rules. For this reason, evacuated cattle destined for sale have to undergo a monitoring examination first. In the case of slaughterhouse shipments, the first animal in every group will be subject to animal product monitoring tests without fail.

In the case of Fukushima Prefecture, there is only one slaughterhouse having a processing capacity of only 36 animals per day, in Koriyama City. Given its small scale, it is impossible for this facility alone to deal with general shipments from the prefecture's commercial cattle farms. So after their monitoring tests are done, farmers have to use slaughterhouses outside of Fukushima Prefecture. The procedures are needed because of this. The same also applies to raw milk. The produce from the first cow is subject to a monitoring examination. In the case of meat, a certificate is issued for products where radioactivity levels of less than 50 becquerels are recorded, allowing them to be shipped outside of Fukushima Prefecture. At present, many of the animals are shipped to a slaughterhouse in Yuki City, Ibaraki Prefecture. The governors of both prefectures discussed and agreed to introducing the examination system I just outlined.

Moreover, it has been decided to set the validity period of these certificates at three months and make the certificates subject to renewal. So in cases when the

period between testing and shipment is extended, the animals in question have to receive additional monitoring inspections in Fukushima before they begin to be shipped outside the prefecture. This regulation is still in effect. The same procedures apply to beef cattle, dairy cattle and to shipments of raw milk from primiparous cows.

Regarding external radioactive exposure, there is a rule that animals found to have readings above the standard 10,000cpm should be decontaminated.

Changing the subject, I will next talk about the restarting of dairy businesses by evacuated farming households. Naturally, everybody living within the evacuation zone was evacuated leaving their cows behind so the number of farmers who have restarted their operations inside the zone is zero. These people are living in temporary accommodation and have suspended their operations. For the farmers in the planned evacuation zone, the situation was a little different because they had a period of preparation. Invitations came from Yamagata, Hokkaido and elsewhere for Fukushima dairy farmers to move to a new prefecture and restart their farming operations there. However, dairy farmers usually have strong attachments to their land and find it difficult to decide to move. Nevertheless, two dairy farming families from within the planned evacuation zone did find vacant, closed-down, dairy farming facilities elsewhere and moved their own cows in to restart operations, after milk shipments from their original farms were no longer possible. Also, one dairy farmer voluntarily closed down due to a hot spot being found on his land. Some dairy farmers in the designated area discontinued their businesses by taking the crisis as an opportunity. Business discontinuation rates of dairy farmers outside the designated area and outside of Fukushima Prefecture have risen since the time of the disaster.

Let me go back now to the sprinkling of hydrated lime on the carcasses of dead animals, the emergency euthanasia of dying animals and the emergency measures for runaway cattle. Since temporary visits resumed at the beginning of May, the prefectural

government has tried to deal with all dead animals in the same way. However, due to problems in the working environment such as the air radiation dosages, etc., while there were some places accessible to people, some other places were too dangerous to enter. So not all dead animals could be treated.

Animals are still having to be destroyed inside the evacuation zone. The animal is first captured and its individual identification established. This allows the owner to be identified. Then, with the owner's consent, the animal is destroyed. (Without the owner's agreement, the animal cannot be destroyed). The procedure used to destroy the animal is to use a sedative, followed by an anesthetic and lastly a muscle relaxant. Then the death of the animal is confirmed, the individual information recorded and the external radioactivity exposure dosage measured. Finally the animal is buried.

According to a report, as of the end of January 2012, a total of 1,142 cattle had been destroyed, as well as about the same number of pigs and 80,000 chickens. The veterinarian working for Fukushima Prefecture also made this report. Actually, the prefectural government funded all the procedures carried out in the evacuation area, and there was no support from the central government at all.

At first, the biggest problem was that burying the carcasses of destroyed livestock was not permitted. Carcass disposals were restricted under the Basic Act on Nuclear Energy Measures although, from July 8th, it became possible to temporarily bury carcasses with measured radioactivity levels below 8,000 becquerels. Because such burying was not generally allowed, there were severe problems from the decay and stench of rotting carcasses and from maggots and flies. While hydrated lime was spread as a countermeasure, at the time, it was said to be only of limited effectiveness.

When we came to ask owners for their agreement to destroy carcasses, many of them wanted confirmation that they would be compensated for their losses. However, at that time, compensation for individual

animals having to be destroyed had not yet been decided. My understanding is that the administration's standpoint was that they could not pay such compensation. Eventually, claims for compensation were made to TEPCO. But, in the event, I have heard that obtaining agreement to destroy livestock was difficult.

I also heard that it was a huge task looking for cattle carcasses because the remains were badly spoiled by runaway pigs, etc. Even when traps were set to capture cows in some cases the animals were later released. So the task of capturing them was a tough one.

Early on, Tomioka Town was against taking action against this problem. But when the number of runaway animals increased and the amount of damage they caused became greater, the town changed its policy and encouraged people to capture and destroy such animals. But there are some livestock farmers who lived in the evacuation zone who still wish to continue their operations, and the administration has had difficulties dealing with them.

Another problem concerned handling cattle that did not have individual identification earmarks. In principle, all cattle should have earmarks. But in quite a few cases the tags had dropped off. Also, those cattle later born in the wild naturally do not have an earmark. As Dr. Ito mentioned earlier, after discussions with legal professionals, it was decided to treat these animals as being ownerless.

In addition, there was the problem of securing land for the burial of carcasses. Burial became permissible on July 8th. But in the same order it was stated the owners of the carcasses had the right to appoint the planned sites for the burials. I have heard that there were many cases in which agreement could not be reached because the administration had to ask the owner, "where is the land you are appointing as the burial site?" This resulted in strong feelings among many owners. Moreover, as this burial would only be temporary, the question of how to later proceed with intermediate processing and final disposal of the carcasses remained

for the future.

Although it is widely surmised that no livestock were evacuated from the evacuation zone, in fact this was not the case. For instance, Fukushima Prefecture approved the transfer of 31 horses kept for the Soma-Nomaori festival. These animals were approved as the result of an examination performed by Dr. Ito. Also, 26 pigs were approved for transfer to Tokyo University for examination purposes. Their movement was approved under the condition that their meat would not be used for food.

I must warn you in advance that the next photos depict some very unpleasant things. They are actual scenes from inside the evacuation zone. This photograph shows mostly dead cows but some are still alive here too. Basically, about 90% of these Holstein cows died while the other 10% became runaways.

I've heard from people who paid temporary visits to the evacuation zone that Holstein cows somehow move around as if they have a type of homing instinct. They are always found hanging around cattle sheds even though they would be better off roaming far away to where there is plenty of vegetation for foraging. On the other hand, in the case of Japanese Black cattle, about 90% became runaways and only 10% stayed behind and starved to death.

This next photograph shows some runaway cattle. Even some Holstein cows and calves became runaways.

At the 33rd annual meeting of the Japanese Society of Clinical Veterinary Medicine, President Yamane expressed his concern that the processing of carcasses in Fukushima was not progressing. Since then, the situation has gradually moved from burying heaps of carcasses to tidying up. But despite this progress, I have heard that the work remained unfinished even into 2012.

I also heard that people have attempted to catch runaway animals by making trap-like fences, but it is actually very difficult to capture livestock that

have turned feral. Moreover, population proliferation due to mating between runaway farm animals or between livestock and wild animals is a very serious development from the perspective of containing common infectious diseases between animals. This also relates to the issue of abandoned cultivated land and to the “satoyama” problem (i.e., common land between areas of human-habitation and the wild) including that of destructive wild animals such as boar and deer. Abandoned cultivated land has been a problem for many years. With the nuclear power plant accident, it is very important for the livestock industry that livestock farmers are able to produce their own animal feed, and this year will be a turning point in seeing whether this is practical. If they can't produce their own feed, they will not be able to claim compensation, but on the other hand, they are asking the question, “If I can't feed my livestock, how can I raise them?”

The situation is that the number of dairy farmers in Fukushima has been reduced by 22~23% in the wake of this disaster. There are three dairy organizations in the prefecture, and the overall volume of dairy produce they handle has fallen to 80% of the pre-disaster level. These are the figures for number of cows and the volume of milk produced in the designated area, and this amount has been lost.

Just after the earthquake, raw milk production volumes were down to 30% compared to the year before, but then they recovered to about 70%. However, due to the exceptionally hot summer, milk shortages continued through to the end of the year. Even moving into January of this year, production volumes have only recovered to 80% of the previous January's level.

This is a report on the monitoring examinations conducted by Fukushima Prefecture. According to this report, high levels of radioactive contamination were detected in the meat of wild boar, although not so high that the meat could not be used as food. However, even after the hunting season began, these animals were not used for food.

The nuclear power plant accident led to an allowed

standard value being established for animal feed. The tentative value was 300 becquerels. For compost, the tentative value was 400 becquerels. The feed grown by dairy farmers themselves is examined while the grass is still growing, but further tests become problematic after the grass is cut and made into hay. During this process, the hay is turned over and becomes dusted with soil. So if the soil is contaminated, the hay will be affected and cannot be used as feed. The three organizations discussed this problem and decided not to use the first, second and third crops of cut grass for feed.

On the other hand, the use of dent corn as a feed crop was not a problem. Because the corn is cut up and carried away by a harvester there is no contamination from the soil. So it was decided that dent corn could be used as feed.

Regarding the dos and don'ts of feeding, one particularly troubling problem is that different cities, towns and villages within Fukushima Prefecture have drawn between what can and what cannot be used as livestock feed. This may be OK from the standpoint of judging final products but, in the case of animal produce, it is very difficult to make judgments about using grass from here and not using grass from over there. This is because the animals may be fed on hay made from grass grown in neighboring municipalities. That is why the three organizations felt the need to make an overall decision.

You are probably aware of the rice straw problem, as this has been reported in the media. Radioactivity was detected in meat from cattle in Fukushima fed on rice straw that had been harvested after the earthquake. Regarding this meat, since beef from cattle shipped from Minamisoma City and Asakawa Town exceeded the standard value, beef cattle producers in Fukushima were initially requested to implement a voluntary ban on shipments of beef. This was then followed by shipment restrictions which meant that the producers became unable to slaughter their animals.

These restrictions were lifted at the end of August and replaced by a set of procedures that had to be followed

before shipments could restart. Under these procedures, the first animal of each farmer's shipment has to be tested. The slaughtered animal's meat must have a radioactive contamination level below 40 becquerels. If the meat passes the examination, the rest of the animals in the shipment can be transferred outside of Fukushima Prefecture. But the situation has been made serious due to the fact that, even before the earthquake, there was a serious shortage of slaughterhouse facilities in Fukushima Prefecture. Most cattle produced in Fukushima have long had to be slaughtered outside of the prefecture at facilities in Ibaraki and Saitama Prefectures. Also, nowadays, all meat from slaughtered animals raised in Fukushima is examined in Shibaura. Initial cattle monitoring examination results have a three-month limit, so if another slaughter takes place, the figures can be renewed based on the newer meat examination results, eliminating the need for follow-up monitoring of livestock in Fukushima Prefecture.

Another difficulty in livestock farming has been the compost problem. For fattening cattle and dairy cattle, the standard radioactive contamination limit for feed is 300 becquerels. On the other hand, for breeding wagyu cattle that are not due to be shipped for some time, it has been decided that feed with levels below 3,000 becquerels is OK. However, if farmers feed their cattle materials with high concentrations of radioactivity, then contamination levels in the animals' manure also becomes high. This compost problem is an ongoing issue right now. At present, the permitted limit for fertilizer such as compost is a value below 400 becquerels, but in actuality, according to individual test results, more than three-quarters of specimens have radioactivity levels exceeding the limit. Because this radioactive material was allowed into the animals' feed, a serious situation has developed. It is now questionable whether setting that regulation value was a wise decision.

When radioactivity in compost exceeds 400 becquerels it cannot be sold to the public but farmers are allowed to re-use their own compost. However, if the radioactivity exceeds 8,000 becquerels, it must be treated as nuclear waste and put into temporary

storage.

This is an outline of the present problems. A new standard has been decided for feed and farmers have begun to adjust to it. Under the present temporary standard, if cows are fed on feed with a radioactivity level of less than 300 becquerels, their milk can be shipped, as can their calves. These calves will go on to become fattening cattle and people will consume their meat. The milk will also be for human consumption. In the case of breeding wagyu cows, the calves are sold at auction, and then fattened to produce beef.

Breeding dairy cows and breeding wagyu cows are allowed to feed on materials with radioactivity levels below 3,000 becquerels. At these levels there are no problems when their calves become fattening cattle and are turned into meat. However, after the cows have delivered five or six calves and are sent for slaughter as retired breeding cows, a problem occurs. The meat from these cows can't be shipped. As a result, their carcasses have been accumulating in great numbers and this is now a major problem. This is why we hear questions such as, "since they can't be used as meat, why can't they be euthanized?" or "Can't they be used for testing?" I think this problem foreshadows what Dr. Ito said about the desire to check on the internal exposure condition of cattle.

Next, I would like to talk a little about the present business situation of dairy farmers in Fukushima Prefecture. Those who were evacuated from the designated area are receiving compensation from TEPCO under the assumption that they have temporarily suspended their operations, not that they have closed down their business. (If a farmer closes down his business, this compensation will no longer be paid). Another issue concerns for how long this compensation will be paid. This uncertainty is extremely demanding on the farmers mentally, a factor which itself has become a barrier to them restarting their businesses.

The present business environment is also a problem for the disaster victims. Within the livestock industry,

which includes compost, the need now exists for the environmental cycling of production which makes the business situation severe. Even if dairy farmers re-start their operations, this problem will remain from now on. Furthermore, working farmers who evacuated from the evacuation zone or designated area now have to commute in from their temporary housing. This is not a situation they will be able to cope with over the long term.

Already almost a year has passed since the earthquake struck and they are struggling to maintain their motivation for their business. There are also many cases in which the wife or other members of the farmer's family have evacuated to places outside Fukushima Prefecture. As the designated areas become reconfigured, the time is drawing near when these people - including farmers who have temporarily suspended their operations - will have to decide what to do for the future.

This is the actual air dose situation. Our association has a branch office in Kodaka in Minamisoma City, approximately 13km from the Fukushima Daiichi Nuclear Power Plant. The air dose in this building is 6 microsieverts per hour. This is the office in Motomiya City where I work. It has a comparatively high air dose figure. Earlier Dr. Kawamata said that he had to stop working because the accumulated dose he received was high. I personally have been exposed to a cumulative dose of about 1.8 millisieverts.

Seminars such as the one shown here are being held in Fukushima Prefecture.

In the prefecture, radioactivity tests are conducted using germanium-testing equipment, but these tests are expensive and take a considerable amount of time to carry out. So some organizations are performing their tests using a sodium iodide scintillator. Our association already has two of these devices and we will obtain another one soon. But even then, we will have nowhere near enough capacity to meet all the demands for testing. In addition to milk, which naturally has to be tested in Fukushima, we are called upon to test feed,

compost, feed crops, etc. Sodium iodide scintillators have been introduced by each agricultural cooperative for testing rice but, in order to test other items, a difficult adjustment procedure is needed to correct for the background. In particular, for testing rice straw, a very fine adjustment is needed which requires great care.

Two days ago, at a meeting of Fukushima Veterinary Medical Association's Farm Animal Group, the following point was brought up. "Although monitoring information is announced on the prefectural website, who is actually looking at it?" Regarding product safety awareness, there is huge discrimination against Fukushima products. Although the prefectural government has been publicizing their countermeasures, many question if this is enough and the subject remains a major issue. At first, a descriptive term "ND" (No Detection) was used in the announcements but, since around November, the notation system has changed to read "ND" and "Detection Limit Value".

It is good to display the figures but the most important thing is to change the public's zero-risk-oriented attitudes. Since this new notation system started, "ND" readings have continued. It is the same with beef, where occasional low radiation readings such as 13 becquerels are being detected. But as I mentioned earlier, all beef shipments are examined, and most of them are classified as "ND".

A shipment embargo remains on mushrooms and vegetables, but monitoring examinations are still carried out on these products and results announced.

Concerning monitoring examinations, the existing temporary standard will be replaced by a new standard from next April. However, I am concerned that instead of making consumers feel more safe this change may result in their zero-risk orientation becoming stronger.

Compared with beef, for which all shipments are examined, raw milk monitoring tests, which are performed on mixed milk in CS units and factory units, are subject to random inspections. For this reason,

there have been requests for raw milk to be examined in each farmer's bulk unit. But if this were actually carried out there would be so many samples that it might not be physically possible to examine them all. It would be very difficult in practice.

Once a product's standard value has been decided, the standard value for the feed is also determined by means of a transfer coefficient, etc. This itself raises another problem; whether it is OK to simply to cut feed and examine it by unit acreage sampling or not. Yet another problem is that the detection limit differs according to the type of detector used. In the case of the NAI scintillator, when it detects a figure of 10 or 20 becquerels, these figures fall within the device's error range of plus or minus 30. So it is difficult to decide if such a reading is OK or not.

Under the new set of standards that will start in April, for milk, the cesium level tolerance will change from the present 200 becquerels to 50 becquerels. In the case of meat, it will change from the present 500 becquerels to 100 becquerels. Consequently, for feed, the tolerance will change from the present 300 becquerels to 100 becquerels. Whether or not a given feed crop is considered acceptable to use will be determined according to the new standards and, on the farms, this issue is considered to be a crucial point this year.

On the front lines in Fukushima Prefecture we are carrying out a variety of examinations based on these conditions. For example, in the case of meat, radioactive contamination is tested for by performing antemortem inspections. But I would ask, instead of this type of inspection, could we not check meat prior to shipment by taking and examining blood samples or carrying out a decontamination test? In this context, we have held a research results meeting to discuss possible methods of decontamination.

As Dr. Kawamata also mentioned earlier, how to decontaminate soil is yet another problem. What is being recommended is to remove the surface layer of the soil and turn the remaining soil over with a plough.

But in reality, even if such decontamination is carried out, the soil can still show higher levels of radioactivity later.

This is a demonstration video made by Fukushima Prefecture. It shows the process of removing the surface layer from a meadow. This image shows a plough turning over the land to reduce the amount of radioactivity measured. But although the levels do decline temporarily when the soil is turned over, it will still require further decontamination at a later date. So even after decontamination is carried out, the basic problem remains. Also, when radioactive particles are blown or washed down from the mountains, the radioactivity levels within the hydrological system (such as freshwater springs and mountain runoff) rise again.

Because of these increasing biological concentrations of radioactive contamination, a number of tasks still remain within the livestock industry related to the feeding of raw materials to livestock, animal product distribution control, and risk analysis.

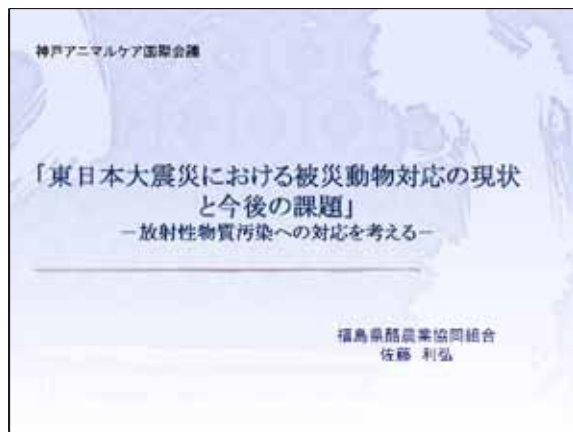
Because the government's initial reaction to the nuclear accident was so poor, the people have little trust in them. That lack of trust is resulting in many problems in many areas including food safety. Cattle farmers in particular are facing a severe situation in which they are, in many cases, being asked to agree to the destruction of their own cattle and they have had restrictions imposed on the movement of these animals.

Regarding food safety, unless validation and proof of safety can be established with greater assurance, it will be difficult for producers in Fukushima to regain the consumer confidence. At the end of the day, essentially, "trust" is the most important consideration.

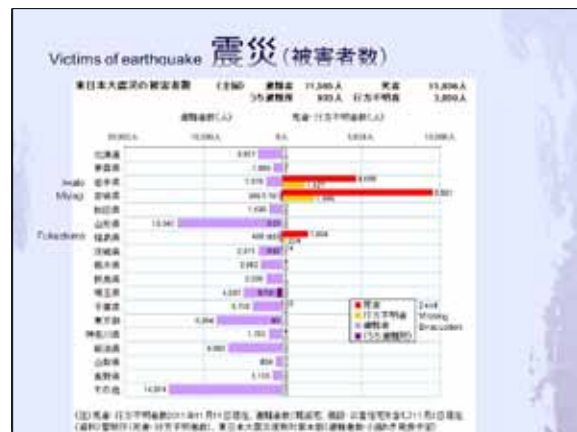
Finally, I believe there needs to be a general review of how to respond to nuclear accidents from now on. It will not be easy to regain the public's confidence in food safety unless some such process is undertaken. However, the effectiveness of the information released is impacted by problems on the information issuing side. Plus there is the quality of the information itself

and the receiving side's level of knowledge. So for the dairy industry, the biggest and most important item on our agenda is food risk management.

Thank you very much for listening.



【Slide 1】



【Slide 5】



【Slide 2】



【Slide 6】



【Slide 3】



【Slide 7】



【Slide 4】



【Slide 8】

当時の問題

Problems after the earthquake

- 建物の損壊 (Destruction of the building)
- ライフライン (Lifeline)
- 道路の陥没～片側交互通行～渋滞 (Collapse of the road ~ Traffic jam)
- 通信、連絡の困難さ・・・PCmail, Twitter, Facebook (Communication failure ...)
- 食料、生活環境・・・パン、カップ麺、レトルト、味噌、乳製品 (Food ...)
- 燃料不足・・・ガソリン、灯油 (Fuel shortage)
- 環境放射線、原発情報 (Radioactive pollution, Environmental radiation)

【Slide 9】

燃油不足

(緊急車両指定) Fuel shortage (Specify the emergency vehicle)

・緊急車両指定～特定の給油所、高速道路通行可 (SAPで給油) ～誘導も相次ぎ、警察による指定が厳格化

【Slide 13】

当時の状況

Current situation

- 職員、農家の安否、所在確認 (Check the safety and whereabouts of staff and farmers)
- 建物・施設の被害状況確認 (Check the damage to buildings and facilities)
- 燃料確認 (Check the fuel)

通信記録 - (Communication record)

【Slide 10】

スーパーの行列

Supermarket queue

営業時間限定 (12:00～17:00)
人数制限して入店
品目制限 (カップ麺お一人様2個まで)
納豆、牛乳買い

【Slide 14】

当時の状況確認

Current situation confirmation

【Slide 11】

支援物資 (牧草ロール)

Support materials (Hay rolls)

足羽町、JAあしよるより緑度も支援物資 (4月、5月、6月、7月、10月、11月)
・・・避難費用、希望農家へ分配

【Slide 15】

給油渋滞

Fueling congestion

【Slide 12】

関連した通達文書

Related communication documents

月日	発信元	内容
3月14日	金館課	「金乳哺育の飼育力支援」
3月19日	農水省～東北農政局	厚労事故を踏まえた家畜の飼養管理について
3月20日	農水省生産局	適切な乾乳に当たっての技術的経営事項について
3月24日	農水省生産局	生乳出荷困難に伴う強制乾乳の推奨

【Slide 17】

震災被害を前提にした対応 (3/22地震・職員通知文書)

Management of cattle after earthquake

- ◆ ステージ毎の牛の管理
 - ・高泌乳牛、中泌乳牛、低泌乳牛
 - ・乾乳前期牛、乾乳期牛
 - ・初妊牛、育成後期牛、育成前期牛、哺育牛についての飼養設計
- ◆ 泌乳牛、特に高泌乳牛の乳量抑制時の注意点
- ◆ 乾乳時の注意点
- ◆ 添加剤の給与
- ◆ 人工授精と繁殖治療について
- ◆ 想定疾患
- ◆ 死亡牛の処置
- ◆ 原発事故を踏まえた家畜の飼養管理

【Slide 18】

産業動物の被災

Victims of industrial animal

【Slide 22】

震災被害を前提にした対応 (3/22地震・職員通知文書)

Management of cattle after earthquake

- ◆ ステージ毎の牛の管理
 - ・高泌乳牛、中泌乳牛、低泌乳牛
 - ・乾乳前期牛、乾乳期牛
 - ・初妊牛、育成後期牛、育成前期牛、哺育牛についての飼養設計
- ◆ 泌乳牛、特に高泌乳牛の乳量抑制時の注意点
- ◆ 乾乳時の注意点
- ◆ 添加剤の給与
- ◆ 人工授精と繁殖治療について
- ◆ 想定疾患
- ◆ 死亡牛の処置
- ◆ 原発事故を踏まえた家畜の飼養管理

【Slide 19】



【Slide 23】



【Slide 20】

相双管内の家畜飼養状況

家畜飼養状況(単位: 頭, 10,000)

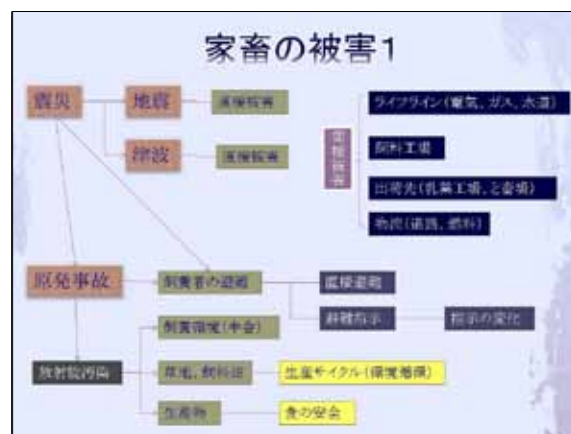
	乳用牛		肉用牛		豚		鶏			
	戸数	頭数	戸数	頭数	戸数	頭数	戸数	頭数		
相双管内	87	2,340	72	4,474	78	10,475	163	425	20	40,874
相双管内	42	1,474	312	2,229	27	5,551	42	127	18	24,292

	肉牛		山羊		低産卵		ブロイラー	
	戸数	頭数	戸数	頭数	戸数	羽数	戸数	羽数
相双管内	4	32	11	41	57	1,243,000	15	576,000
相双管内			5	20	55	714,000	4	111,000

【Slide 24】



【Slide 21】



【Slide 25】



原発事故を踏まえた飼養管理（3/10東京農工大学講義より抜粋資料）

原発事故により、放射性ヨウ素、放射性セシウム等の放射性物質を含む粉塵が落下する可能性があり、大気中の放射線量が通常より高いレベルで検出された地域では以下に留意すること。

- 1) 牧草（サイレージ含む）を給与する場合は、事故以前に刈り取られたものにする。
- 2) 事故以降も屋内保管されたもの、ラップ等で外気遮断されたものに限る。ラップ保管のものは、包材外装を破き取りまたは水洗いの後に使用のこと。
- 3) 家畜の飲用水は止水槽にフタをする等、葉下粉塵等の流入を防止する措置を講ずる。
- 4) 当面の間、放牧は行わないこと。



原乳出荷停止

- ◆ 3月19日 原乳より放射性ヨウ素検出の発表
- ◆ 3月20日 福島県より出荷自粛要請
- ◆ 3月21日、内閣総理大臣命で、原子力災害対策特別措置法(平成11年法律156号)、第20条第3項に基づく指示。
- ◆ 平成23年3月23日より岩手県産原乳に切替
- ◆ 「製品は市場には出回らなかった。」

日程	時間	英語	第一原案	第二原案
全期1日目(土)	14:00	酒類検査実習開始		
	15:45		知事参事室(Inspector's Office)	
	17:30		中庭 120m 鑑別実験場 中庭 120m 鑑別実験場内通廊	
全期2日目(土)	09:48		中庭 120m 鑑別実験場	
	12:30			中庭 200m 鑑別実験場 中庭 120m 鑑別実験場内通廊
	13:30		1号館7才急用場	
	17:30			中庭 120m 鑑別実験場
	18:25		中庭 120m 鑑別実験場	
全期3日目(日)				
全期4日目(月)	01:05		3号館7才急用場	
全期5日目(月)	08:10		2号館7才急用場(2号館7才急用場)	
全期6日目(月)	08:14		4号館7才急用場	
	09:05		4号館7才急用場	
	11:15		中庭 120m 鑑別実験場	
全期7日目(月)	07:30		3号館7才急用場	
全期8日目(月)	11:00		鑑別実験場(120m 鑑別実験場)	
全期9日目(月)				

国内史上最大
3日間
M1
国内史上最大
3日間



A blue tractor is pulling a large, cylindrical, light-colored tank through a green field. The tank is spraying a large plume of white water or mist behind it. The background is a dense line of dark trees.

【Slide 38】

[illegible]

【Slide 38】

原乳廃棄（草地にまく）

【Slide 39】

【Slide 39】

- 3月15日：震災により物流が途絶え、死亡牛のBSE検査後の死体の処理ができなくなった。検査所の冷蔵庫が満杯になり検査中止、死亡牛の屠人が困難となった。
- BSE検査の除外特例の施行、化成増法第2条第2項但し書きの規定に基づき、死体を埋葬。（石破の保健所、農務保健事務所等の許可を取る。「死に動物取扱場外処理許可申請書」の提出）

震災による影響：死体（死成増法）による廃棄物の削減（減少）と、屠と埋の処理の促進。

- 3月25日：死体の輸送が可能となり、死亡牛BSE検査が再開。
- 4月より、死体受け入れ先で肉骨粉より放射性物質を検出、青森県への全ての屠場輸入が禁止となる。
- 再び、死亡牛のBSE検査が可能となり、埋葬に帰る。
- 6月1日：死亡牛処理業者の要望により、処理再開となる。

【Slide 40】

- 県内のCS(クリーンステーション)および乳業工場単位で原乳の試料採取する。
- 概ね1週間毎に、継続的に原乳を採材→モニタリング検査を実施。(財)日本分析センターまたは福島県原子力センター福島支所の行き、翌日に結果が出るのでこれを公表する。
- 3回連続で100Bq/kg以下となる場合、CSあるいは乳業工場単位で出荷停止を解除する。
- 解除後も毎週火曜日に定期的に検査を実施する。

【Slide 41】

[illegible]

【Slide 42】

牛の移動時の被爆スクリーニング検査

- ◆ 牛の移動
- ◆ 「生体出荷」・・・市場等で売買するため
- ◆ 「一時待避」・・・当該地区から一時的に移動
- ◆ 「と畜出荷」・・・食肉用に出荷するため
- ◆ 基準100,000cpmを超えた場合は除染

※表面汚染の基準（線量率計と測定器系で作る）

100,000cpm \approx 1 μ Sv/h.....一般民の体外汚染の基準

【Slide 46】



【Slide 43】

避難移動後の再開状況

指定区域	県下	組合	市町	備考
警戒区域	26戸	21戸	0戸	
計画的避難準備区域	12戸	26戸	2戸	本富市に移動し再開
緊急時避難準備区域	13戸	8戸	7戸	436車乳出専用線 930トン車1基一部継続
特定避難勧奨地点		2戸		2戸は避難量120本、1戸自主再開、1戸は継続

【Slide 47】



【Slide 44】

警戒区域で行われたこと(Ⅱ)

- ◆ 死亡畜への消石灰散布等の緊急的な衛生対策
- ◆ ひん死畜および緊急的措置が必要な放任家畜等に対する応急措置

死亡畜の処理(4/13～4/15)

	頭数	頭数(総数)
牛	4頭	80頭
豚	2頭	7100頭
鶏	5頭	80万羽

※死亡した家畜は、衛生管理センターにて消毒・搬送された後、指定の埋却場へ搬入され、埋却処分された。

※死亡した家畜のうち、衛生管理センターで確認できなかったものは、自治体関係機関と連携し、現場での緊急対応が行われた。
 ※死亡した家畜のうち、衛生管理センターで確認できなかったものは、自治体関係機関と連携し、現場での緊急対応が行われた。
 ※死亡した家畜のうち、衛生管理センターで確認できなかったものは、自治体関係機関と連携し、現場での緊急対応が行われた。

【Slide 48】

計画的避難区域と牛の移動

- 牛の移動は、被爆スクリーニング検査をもって行う。
- と畜については、牧場単位で畜産物モニタリング検査を行い、基準値以内を確認して「と場出荷」する。
- 避難移転や売買について、
 - 搾乳牛は抽出の1頭の生産物：原乳をモニタリング検査し、基準値以内を確認してから移動し、移動先の生産物出荷を可とする。
 - 乾乳牛、初妊牛は移動後分娩した1頭をモニタリング検査し、原乳出荷を可とする。

```

graph LR
    subgraph ContaminatedArea [計画的避難区域]
        A[畜産物モニタリング検査(乾乳)]
        B[と場出荷]
    end
    subgraph SafeArea [安全な地域]
        C[畜産物モニタリング検査(初乳)]
        D[初産第一出荷]
    end
    A --> B
    C --> D
    E[搾乳牛] --> F[乾乳牛、初妊牛]
    F --> G[育成牛]
  
```

搾乳牛 乾乳牛、初妊牛 育成牛

【Slide 45】

警戒区域で行われたこと(横)

◆ 殺処分

```

    graph LR
      A[捕獲  
(保護用檻)] --> B[運往施設  
(保護用檻)]
      B --> C[飼育]
      C --> D[検死]
      D --> E[初年度]
      E --> F[死亡確認]
      F --> G[運往記録]
      G --> H[殺量測定]
      H --> I[運往記録]
  
```

→ 100%確認

	牛	豚	鶏
粗処分頭数	1,142頭	5,815頭	61,454頭

【Slide 49】

警戒区域対策上の問題点(Ⅱ)

- ◆ 費用負担…財政支拂難
- ◆ 当初は一時埋却不可…消却、留置等山間部畜産上の問題
- ◆ 原子力損害賠償との関係…施設分可成り補償を確認される
- ◆ 遺体捜索…遺体掘り(遺体で汚れた箇所)により見られる
- ◆ 捕獲した家畜が何者かに解放される。
- ◆ 飼養継続を望む所有者への対応
- ◆ 耳標未装着牛の取り扱い…無用物として
- ◆ 埋却地の確保
- ◆ 中間処理、最終処分

【Slide 50】

警戒区域(放任家畜)



黒毛和種は1割が雄牛、9割が放任牛に

【Slide 54】

警戒区域外へ異動した家畜

- ◆ 馬…野間追用31頭を祭事用として
 - ◆ 牛…130-150頭を北里大学試験用
 - ◆ 豚…26頭を東京大学試験用
- ※食用を前提としない条件で許可

【Slide 51】

警戒区域(放任家畜)



【Slide 55】

警戒区域(搬売した死骸)



【Slide 52】

警戒区域



死屍累々の状態から片付けられた牧場

【Slide 56】

警戒区域(搬売した死骸)



ホルスタイン種は約9割が雄牛、1割が放任牛に

【Slide 53】

放任家畜と野生動物

- 1 捕獲コントロール(家畜の野生化)
- 2 自家交配(雄牛の性成熟)～増殖
- 3 野生動物との交配(豚と猪)～エリア拡大
- 4 共通伝染病
- 5 野生動物(猪、鹿、熊)のエリア拡大
→耕作放棄地と里山問題

【Slide 57】

酪農家戸数の状況 (H23.9.30現在)

【県酪農協全体】

	酪農家戸数	乳牛頭数	乳量
2010年	307戸	9,996頭	152t/日
2011年	239戸(77.9%)	8,281頭(82.8%)	121t/日(80.1%)

地区	酪農家戸数	乳牛頭数	備考
県北	33戸(-10)	1,133頭(-273)	山本郷地区
安達	30戸(0)	739頭(-31)	
黒川	40戸(0)	1,216頭(+18)	
田村	38戸(-2)	454頭(+15)	
東石	31戸(0)	1,753頭(+39)	
碓	10戸(-38)	361頭(-1100)	福島県外、県内
いわき	6戸(-3)	151頭(-31)	
会津	10戸(-1)	318頭(-15)	
黒瀬	44戸(-3)	2,176頭(-90)	
JFAそうま	0戸(-11)	0頭(-249)	飯沼村

【Slide 58】

原発事故を踏まえた 粗飼料中の放射性物質の暫定許容値 (4/14満席)

対象\状況	放射性物質 (許容量大値)	放射性セシウム (許容量大値)
乳用牛(産乳中及び初乳交配以降の牛)	70Bq/kg(実重量)	300Bq/kg(実重量)
肥育牛(出荷前概ね16ヶ月程度以上の牛)	農産物で出発制限を受けていない地域で生産された粗飼料	300Bq/kg(実重量)
その他の牛(産乳前の未産乳牛、繁殖用牛等)	農産物で出発制限を受けていない地域で生産された粗飼料	5000Bq/kg(実重量)

【Slide 62】

福島県内酪農家状況

震災前の状況

酪農協体系	出荷戸数	受乳戸数	飼養頭数(頭)			
			乳用牛	肥育牛	合計	備考
県酪農協	293	159	7,035	794	2,122	9,951
全県	172	77	3,687	451	995	5,133
小野地区	51	18	774	63	168	1,005
合計	516	254	11,495	1,308	3,285	16,080

原発事故による指定区域(県全体)

指定区域	出荷戸数	受乳戸数	飼養頭数(頭)			
			乳用牛	肥育牛	合計	備考
警戒区域	26	13.5	644	132	149	925
計画避難区域	32	18.9	680	94	216	990
福島県避難区域	13	6.2	291	40	65	396
合計	71	38.6	1,615	266	430	2,311

【Slide 59】

飼料の暫定許容値

- 飼料の暫定許容値=300Bq/kg
- 粗飼料は水分含量80%ベース
- その他飼料は製品重量

・当分の間と畜を予定しない繁殖雌牛や育成牛は、3000Bq/kg(水分80%ベース)以下の利用が可能。ただし、これらを摂取した牛は12ヶ月以上肥育した後にと畜出荷する。

また、これより生産された堆肥は、400Bq/kgを超える可能性あり。

・放射性セシウムの飼料から畜産物への移行係数(最大値)

	肉	乳
牛	0.096	0.068
羊	1.3	0.32
山羊	1.9	0.33
鹿	2.8	

厳格な飼養管理=飼料も含め使用しない、放牧を行わない。

【Slide 63】

現況:事故後の生乳生産、乳業の状況

【生乳生産状況】

	4月	5月	6月	7月	8月	9月	計
受乳乳量	2,435t	6,425t	5,907t	5,952t	6,425t	5,991t	32,135t
前年比	30.2%	72.0%	74.3%	75.7%	79.8%	82.1%	85.8%

【乳業プラント工場の状況】

- 3月 --- 工場閉鎖、製品廃棄、畜産廃棄物処理施設再開
- 4.5月 --- 本稼働状況
- 6月 --- 福島県産乳処理再開、製造業若干減産
- 7.8月 --- 原料調達再開
- 9月 --- 福島県産乳による学校給食の落ち込みが影響
- 12月 --- 乳量は80%強に回復

【Slide 60】

自給粗飼料に関する判断

月日	事項	備考
4月14日	自給粗飼料の収穫・利用・放牧の自粛要請(県)	
5月2日	牧草の放射性物質モニタリング検査結果発表(県)	
5月13日	牧草利用および放牧の自粛要請(県)	会津地区を除く
7月8日	事故後放牧再開の経緯による放射性セシウムの無制限拡大牛肉が発表	
7月19日	牛肉出荷制限(国)	8月25日解除
8月23日	2番草給与自粛(団体間協議で決定)	会津地区を除く
9月13日	3番草給与自粛(団体間協議で決定)	部分的には解除
9月30日	飼料作物(デントコーン・サイレージ、稲刈り)給与可	部分的には解除
10月31日	稲刈りの給与可(警戒区域等を除く全地域)	

【Slide 64】

畜産物のモニタリング検査 (福島県、～8/31)

対象	検査開始	回数	検体数	備考
鶏卵	3月16日	51	326	無検出・少々の検出あり、検出は検出中
鶏卵	3月26日	11	60	
鶏肉	3月28日	15	39	
豚肉	3月30日	32	67	
牛肉	3月15日	17	104	
馬肉	4月6日	3	3	
羊肉	7月25日	1	1	

※南相馬市の鶏肉より5,720Bq/kg検出。
11の付けで福島県12市町村で検出されたイノシシの肉の出荷停止と摂取制限を指示した。
狩猟解禁になるも、食用にはならず。

【Slide 61】

飼料作物の使用可否 (9/30)

原発事故後に作付けされた飼料作物

対象作物	検査開始	検査回数	検査結果	検査結果	検査結果
			放射性セシウム (Bq/kg)	放射性セシウム (Bq/kg)	放射性セシウム (Bq/kg)
イネ(稲)	3月16日	51	326	60	39
大豆	3月26日	11	60	67	104
小麦	3月28日	15	39	3	1
大麦	3月30日	32	67		
粟	3月15日	17	104		
雑穀	4月6日	3	3		
飼料用米	7月25日	1	1		

※南相馬市の鶏肉より5,720Bq/kg検出。
11の付けで福島県12市町村で検出されたイノシシの肉の出荷停止と摂取制限を指示した。
狩猟解禁になるも、食用にはならず。

【Slide 65】

[illegible]

- ◆ 肥料の種類
 - ◆ 牛ふん堆肥
 - ◆ 稲わら堆肥
 - ◆ 雑草堆肥
 - ◆ パーク堆肥(原木の樹皮)
- ◆ ※暫定基準値 400Bq/kg以下
- ◆ 10/12現在の個別検査では75%が暫定基準値
越え

月日	市町村	事項
7月9日	西條市	出現した11頭の牛のうち暫定検査場と知るセリウム検出
7月11日	西條市	立ち入り調査、欄ワラから、厩前直上部分セリウム検出
7月11日	馬丁	緊急立入りへ決定
7月12日	西川町	白河市の福フタ生産組合から購入した、欄ワラ約260個 から30～35μSv/hの検出に際する指導の徹底
7月14日	農水省	農水省より欄ワラの使用に関する指導の徹底
7月14日	福島県	欄ワラの給与中止と緊急立入り調査開始(7/18まで)の牛 の出荷・移動の自粛要請
7月19日	波府	福島県産牛の食肉処理場への出荷制限を指示 以降、福島にもセリウム汚染肉肉検出(自牛、宮城、群 県にも出荷停止状況がある)
8月25日		肉牛の出荷制限解除

- ・当分の間、と畜を予定しない繁殖雌牛や育成牛は、飼料3000Bq/kg（水分80%ベース）以下の利用が可能。
- ・ただし、これより生産された堆肥は、400Bq/kgを超える可能性あり。

- ・400 Bq/kg未満は一般流通可能。
- ・400～7999Bq/kgは自家還元。（自給飼料または畜舎連携の取り組み等）
- ・8000Bq/kg以上は利用せず。一時保管。

- 各農家から1頭モニタリング検査を実施。
- 50Bq/kg未満であれば、県外出荷を可能とし許可証発行有効期間は3ヶ月で、その後は郡山食肉センターで再度モニタリング検査を実施し許可を更新する。
- 指定区域、出荷牛肉500Bq/kgを超過した農家、汚染飼料を給与した可能性がある農家については全頭検査を実施する。
- 緊急時避難準備区域については11月1日付けで、指定区域が解除され、牛肉で給与環境を満たしていれば全頭検査対象とはならなくなった。
- 実際には、出荷牛は全てモニタリング検査が継続され、県外のモニタリング検査値も更新用検査として採用。

飼料<3000kg

乳牛

牛乳

子牛

肥育牛

牛肉

子牛

繁殖用牛

飼料<2000kg

繁殖用牛の牛肉が屠畜状態と保蔵制度

平成22年11月16日						
堆肥の種類	検査項目	製造所の場所	放射性セシウム 測定値の合計 (Bq/kg)	現在の対応状況等 (自治体等による)	備考	
1	牛ふん堆肥	H23.11.95	伊達市	190		
2	牛ふん堆肥	H23.11.95	伊達市	290		
3	牛ふん堆肥	H23.11.95	伊達市	400		
4	牛ふん堆肥	H23.11.95	伊達市	ND		
5	牛ふん堆肥	H23.11.95	伊達市	190		
6	牛ふん堆肥	H23.11.95	伊達市	790	自家資機	
7	牛ふん堆肥	H23.11.11	伊達市	ND		
8	牛ふん堆肥	H23.11.11	伊達市	3,200	自家資機	
9	牛ふん堆肥	H23.11.11	伊達市	300		
10	稲わら等堆肥	H23.11.11	伊達市	890	自家資機	
11	稲わら等堆肥	H23.11.11	伊達市	400		
12	稲わら等堆肥	H23.11.11	伊達市	3,300	自家資機	
13	稲わら等堆肥	H23.11.11	湯沢町	3,590	自家資機	
14	牛ふん堆肥	H23.11.95	二本松市	3,730	自家資機	
15	牛ふん堆肥	H23.11.95	二本松市	3,690	自家資機	
16	牛ふん堆肥	H23.11.95	二本松市	4,290	自家資機	
17		H23.11.95	二本松市	890		

	新建指示	疏解	内保	外保	生态
市辖两市(30km)	4 ^万	2 ^万 (高保)			2 ^万
重点战略疏解区域	9 ^万	3 ^万	1 ^万	1 ^万	5 ^万
片面的疏解区域	26 ^万	2 ^万 (转移)			24 ^万
管束区域	22 ^万				22 ^万
雄安新区和央企区	1 ^万 /2 ^万				1 ^万
计	62 ^万	7 ^万	1 ^万	1 ^万	54 ^万

114 ■ リぶ・らぶ・あにまるず 神戸アニマルケア国際会議 2012

被災者が抱える問題

【経営継続者の場合】	【休業者の場合】
<ul style="list-style-type: none">◆ 経営環境の激変(地価暴落も主因ならない)◆ 現状の逸失利益補償制度では、モチベーションが保てない。(継続が得る利益が得ない)◆ 家族が離散状態	<ul style="list-style-type: none">◆ 新たな指定区域によって...◆ 解除準備区域◆ 居住制限区域◆ 長期居住困難区域

【Slide 74】

職場の空間線量(本宮市)

事務所・教育施設・商店

1. 単位: $\mu\text{Sv/h}$ 2. 日: 測定日 3. 時間: 測定時間

測定場所	測定日	測定時間	測定値	測定日	測定時間	測定値
事務所A	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所B	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所C	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所D	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所E	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所F	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所G	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所H	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所I	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所J	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所K	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所L	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所M	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所N	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所O	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所P	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所Q	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所R	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所S	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所T	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所U	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所V	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所W	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所X	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所Y	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02
事務所Z	2018.01.15	10:00	0.02	2018.01.15	10:00	0.02

(単位: $\mu\text{Sv/h}$)

【Slide 78】

放射性物質に向き合う

【Slide 75】

[illegible]

【Slide 79】

[illegible]

【Slide 76】

検査機導入(10/14)

【Slide 80】

警戒区域 (10/3 災害所事務所、一階住宅棟壁面)

第1箇免から1.3km

【Slide 77】

検査機導入

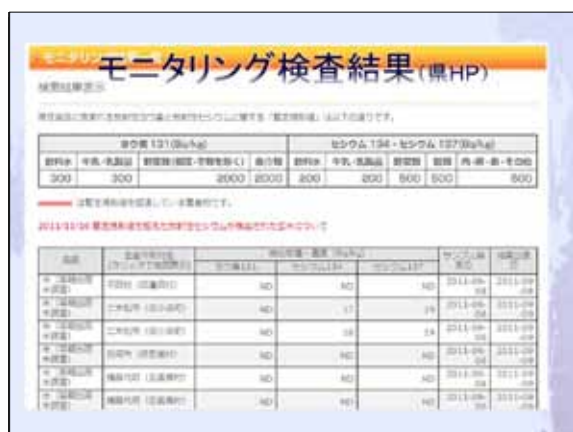
【Slide 81】



【Slide 82】



【Slide 86】



【Slide 83】



【Slide 87】



【Slide 84】



【Slide 88】



【Slide 85】



【Slide 89】

放射性物質の新基準

○放射性セシウム(Bq/kg)

2012年4月施行

食品群	暫定規制値	食品群	新基準値
飲料水	200	飲料水	10
牛乳・乳製品	200	牛乳	50
野菜類		一般食品	100
穀類	500		
肉・卵・魚・その他		乳児用食品	50

牛乳 = 牛乳、加工乳等、乳飲料
乳製品 = 乳脂濃縮乳、発酵乳、チーズ等

【Slide 90】

除染

【Slide 94】

家畜用飼料の暫定許容値 (放射性セシウム)

$$\text{飼料中の暫定許容値 (Bq/kg)} = \frac{\text{畜産物中の新基準値 (Bq/kg)}}{\text{飼料の給与量 (kg/日)} \times \text{移行係数 (日/kg)}}$$

【新基準に基づく牛用飼料の見直し】

畜産物の新基準 (Bq/kg)	飼料給与量 (kg/日(実重量))	移行係数(試験から求めた輸入の係数)	飼料に含まれる放射性セシウム濃度
乳 50	64kg/日(実重量)	4.6×10^{-3} 日/kg	170Bq/kg
肉 100	21kg/日(実重量)	3.8×10^{-3} 日/kg	125Bq/kg

乳用牛、肉用牛に許容される飼料中の放射性セシウム濃度は、
100Bq/kg(水分80%換算として)

【Slide 91】

セシウム沈着量地図 (文部科学省)



【Slide 95】

放射セシウム規制値

	改正後	現行
肥料・土壌改良資材・増土	400Bq/kg	400Bq/kg
馬・豚・羊・鶏用飼料	300Bq/kg	300Bq/kg
牛用飼料	100Bq/kg	300Bq/kg
養殖魚用飼料	100Bq/kg	100Bq/kg
きのこ菌床用培地	150Bq/kg	150Bq/kg

【Slide 92】

農地土壌、除染技術

5000Bq/kg以上の農地をそれ未満にする

土壌中放射性セシウム濃度	除、水田
～5,000Bq/kg	・反転耕 ・移行低減栽培技術
5,000～10,000Bq/kg	地下水位・高…表土削り取り、反転耕 地下水位・高…表土削り取り 水田は水による土壌洗浄・除染
10,000～25,000Bq/kg	表土削り取り
25,000Bq/kg～ (高濃度下作業技術必要)	表土削り取り(5cm) 土壌固定の固肥剤

【Slide 96】

農業分野における放射性物質試験研究成果説明会 (第4回(第2))

- 「放射性セシウム吸着能力を有する生用資材について」
- 「肉用牛における血液と筋肉の放射性セシウムの関係について」
- ブドウ・ナシ・リンゴの葉および果実中の放射性Cs濃度の経時的推移について
- 「樹園地における樹皮の汚染状況について」
- 「レーザーブル等建設機械を用いた水田の放射性物質の除去工法」
- 「ヒマワリの放射性物質吸収とナタネの油への移行について」
- 「野菜における放射性物質の吸収について」
- 「農産物加工における放射性物質の動態について」

【Slide 93】

農地土壌、除染技術

- ◆ 表土の削り取り
 - ・基本的な削り取り(5cm90%、6cm97%、7cm100%)
(4cm/排土40t/10a)
 - ・固化剤を用いた削り取り
 - ・芝、牧草の剥ぎ取り(草、リター層、ルートマット、…)
- ◆ 水による土壌洗浄・除去
- ◆ 反転耕
- ◆ 高吸収植物による除染(ヒマワリ低い、糸状菌、…)

【Slide 97】



【スライド 98】

「原発事故によって見えてきたもの」

【スライド 102】



【スライド 99】

実感する課題

- ◆ リスクマネジメント(想定リスクと準備)
... 情報が無いとリスクへの理解が得られない
- ◆ 初動環境: 情報錯綜(避難情報、統制)
- ◆ 避難者～所有動物～行動制限
- ◆ 農政の問題
- ◆ 食品安全の問題

【スライド 103】

再除染

- ◆ 除染しても、再び線量が上がる。
- ◆ 山から粉塵と共に放射性物質が飛来
- ◆ 山の清水の流れと共に空間線量が上がる
(水系濃縮)

【スライド 100】

リスクコミュニケーション Risk communication

安心 = 安全 + 信頼



- ◆ 公正な情報を出し続ける
- ◆ ゼロリスクは無いということ
- ◆ 的確に情報発信
- ◆ 見えないもの(リスク)をわかりやすく説明
- ◆ 同じ目標に立つ
- ◆ 受け手が判断できる尺度を持たせる
- ◆ リスクの勘定しを作り、受け手が判断
- ◆ 双方向の対話機会

【スライド 104】

「放射性物質(セシウム)は濃縮する」

- ◆ 除染後下がった空間線量が再び上昇(雨等)
- ◆ 雨、水系、泥・土砂の流れ等
- ◆ 森林の除染
- ◆ 借り置きから一時保管
- ◆ 生物濃縮を考える。
- ◆ 流通管理
- ◆ 畜産物、原材料(飼料)のフローダイアグラム
- ◆ リスク分析

【スライド 101】

「放射性物質によって、
従来からの課題がクローズアップされた」

- ◆ 危機管理
- ◆ 放射性物質は濃縮する。
- ◆ 放任家畜と野生動物
- ◆ 食品モニタリング検査環境
- ◆ 食のリスクマネジメント
- ◆ ...

【スライド 105】



【スライド 106】



知っていますか？

マイクロチップが、あなたとペットをつなぐために必要だってこと



ほんの少しの勇気を出してマイクロチップを装着したら…

迷子になっても、保護された時に
身元がすぐに確認できます



地震などの災害時にはぐれても、
飼い主の元に返ってくる確率が高まります



番号の改ざん、消去ができないので、

盗難にあったとしても飼い主だと証明できます



事故にあい、怪我をして保護された時も、
迅速な連絡が可能です

検疫がスムーズになり、
短い時間で出入国できます



増えてます
マイクロチップ
登録



安心だワン！

形状は？

直径2ミリ、長さ12ミリ程度の円筒形です。内部はコイル状のIC(小型集積回路)になっています。

装着は？

一般に犬猫の場合、予防注射と同じ方法で首の後ろ(背側頸部皮下)に埋め込みます。

費用は？

数千円～1万円くらいが一般的です。また、別途で登録料が千円かかります。

登録は？

データ登録(郵送)の必要があります。病院やショップが代行してくれる場合もあります。

読み取りは？

専用リーダー(情報読取機)の電波誘導で、マイクロチップに記録された個体番号等を読み取ります。

保護されたら？

持ち込まれた保健所や動物病院などが読み取った情報から飼い主を確認し、連絡を取ってくれます。

対応年数は？

電池式ではありませんので半永久的(30年程度)に使用できます。