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Biosafety and Biosecurity

Module 4, Part 3:

Violation of Biosecurity by Terrorists: Two Case Studies – Rajneeshees 1984 and Aum Shinrikyo 1990 -1995

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Rajneeshees Background

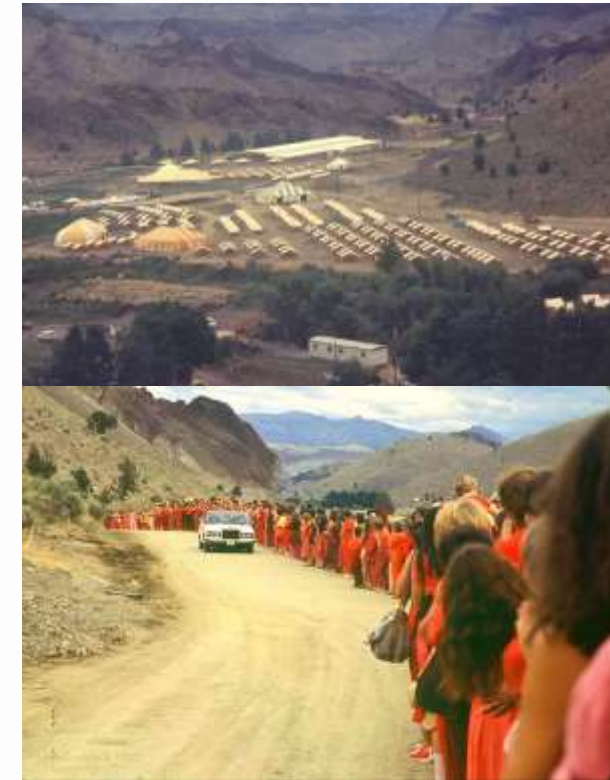
- Founded and led by Bhagwan Shree Rajneesh
- Came to the United States from India in early 1980s
- Sickened 741 people with BW attack





Rajneeshees Chronology (1/4)

- 1982 – Nurse Puja named director of Pythagoras Clinic and Pythagoras Pharmacy
- Early 1984 – Bhagwan and Sheela attempt political control over Waco County
- Clinic procures “bactrol” disks, some with *Salmonella typhimurium*





Rajneeshees Chronology (2/4)

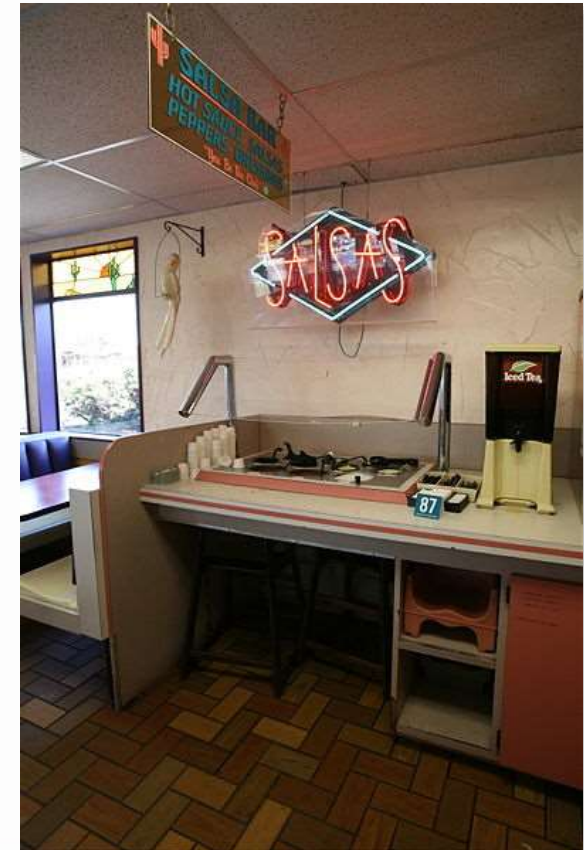
- Puja oversaw production of *Salmonella*
- August 29, 1984 – water laced with *Salmonella* given to two visiting county commissioners
- Early September 1984 – contamination of salad bars in two restaurants
- Mid-September 1984 – contamination of salad bars in ten restaurants





Rajneeshees Chronology (3/4)

- October 1984 – 751 persons reported sick, 45 hospitalized
- Two attempts to contaminate city water supply, to no effect
- Late 1984 – determination that outbreak was an accident





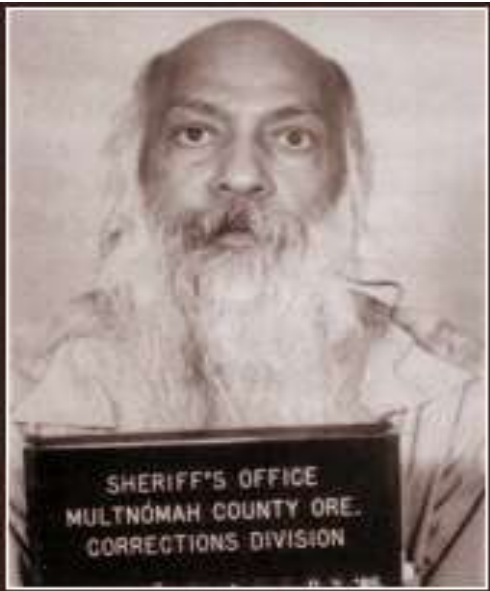
Rajneeshees Chronology (4/4)

- September 16, 1985 – Bhagwan accused Sheela and her allies of mismanagement and attempted poisonings
- Oregon Attorney General set up joint task force between state police and FBI
- October 2, 1985 – task force obtained search warrant and subpoenas
- “Bactrol” discs and equipment found (“smoking gun”)





Bhagwan Shree Rajneesh and Ma Sheela



- Summer 1986 – Sheela and Puja sentenced to 20 years each, fined ~\$ 500,000
- Bhagwan received 10 year suspended sentence and fined \$400,000





Introduction: The Aum Shinrikyo

- Founded by Shoko Asahara (Chizuo Matsumoto) in the 1980s
- Religious doomsday cult
- Well-educated but misguided membership
- ~10,000 members in Japan by 1995; perhaps 40,000 worldwide
- Extremely well-financed by member contributions
 - Estimated 1995 net worth - \$1.5 billion

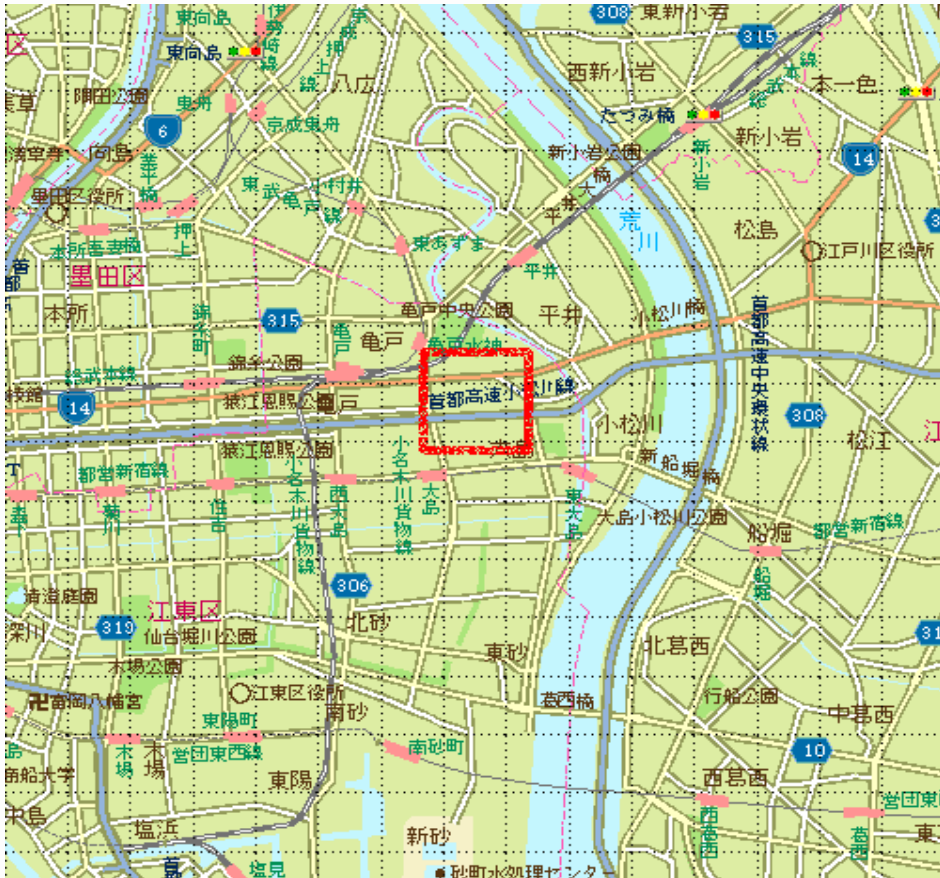




Attacks by Aum Shinrikyo

- Aerosolized botulinum toxin
 - 1990 – U.S. Navy facilities in Tokyo and Tokyo International Airport – *no effect*
 - 1993 – Central Tokyo – *no effect*
 - 1995 – Tokyo subway – *failed*
- Aerosolized *Bacillus anthracis*
 - 1993 – Kameido, a suburb of Tokyo – *no effect*
 - 1993 – Central Tokyo, two attacks - *no effect*
- Chemical war gas
 - 1994 & 1995 – Sarin in Matsumoto and Tokyo subway – *partially successful*
 - 1995 – Cyanide in Tokyo subway - *failed attack*

The Kameido Incident: Geographic Location



- Kameido, Koto Ward, Tokyo
- Mixed commercial and residential area
- Population
 - Kameido – 43,000
 - Koto Ward – 378,000



The Kameido Incident: Spray Site



- Eight floor concrete building owned by Aum
- Spray device on roof
- Tank containing liquid suspension of *B. anthracis* on ground floor
- Bacterial suspension pumped to roof via plastic tubing



Kameido Incident: June 29 – July 2, 1993



- June 29-30 – Complaints of foul smells from area residents
- July 1 – Intermittent mist from two roof-top “cooling towers”
- July 2 – Asahara meeting with local residents

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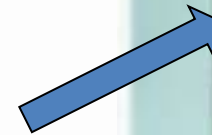
Kameido Incident: Initial Investigation, 1993

- Claim: foul odor due to boiling beans and perfumes for religious rites
- Use of the roof-top devices ceased early in the morning of July 2; devices removed
- Local officials denied entry to building while occupied by the cult
- Sample of gray, gelatin-like fluid collected July 1; stored until tested in December 1999
- Chemical analyses of air samples and fluid collected from the building



Kameido Incident: Building Inspection, 1993

- Building cleaned by cult members and voluntarily vacated July 15
- No equipment remained when inspected July 16
- Black stains noted on ground floor walls





Kameido Incident: 1995 Revelations

- Involved release of a *B. anthracis*-containing aerosol
- *B. anthracis* strain reputedly obtained from commercial sources
- Plans of dispersal device obtained
- Dispersal efficiency of device unknown
- Device suffered from clogging



Microbiological Findings on Fluid Sample

- Mixed bacteria recovered, including *B. anthracis*
- Other unimportant bacteria from side of building





Lessons Learned: Rajneeshees

- Low skill level in applied microbiology
- Purchase of foodborne pathogen from chemical supplier
- Easy propagation in basic laboratory
- Easy weaponization with plastic spray bottles
- Easy dispersal by spraying over salad bars
- 750 casualties; no fatalities





Lessons Learned: Aum Shinrikyo (1/2)

- High technical skills but not in applied microbiology
- Inability to acquire the requisite strains
- Purchase from chemical supplier and recovery from soil
- Easy propagation in well-equipped laboratory
- *B. anthracis* weaponization by spraying over an unprotected city
- Composition and efficiency of dispersal unknown





Lessons Learned: Aum Shinrikyo (2/2)

- Use of *B. anthracis* Sterne strain, which is avirulent
- Strain used was poor producer of the toxin
- Spray device inefficient and probably did not create an aerosol
- Difficulty for untrained persons to develop weapons and use them effectively